ENGINEERING NEWS-RECORD

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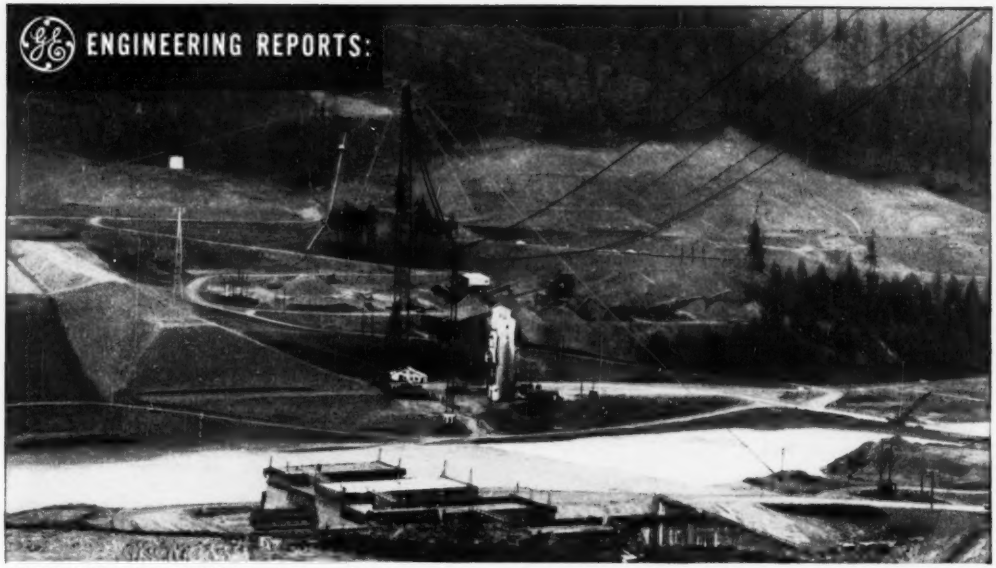


800,000 YARDS OF CONCRETE will be needed to complete Lookout Point Dam on the Willamette River near Lowell, Oregon. G-E powered cableway—2600 feet long with 25-ton hook capacity—is of radial type, with stationary 428-foot-high head tower and movable tail tower. Maximum conveying speed is 1800 fpm, maximum hoisting speed is 470 fpm.

Complete electrification keeps Lookout Point on schedule

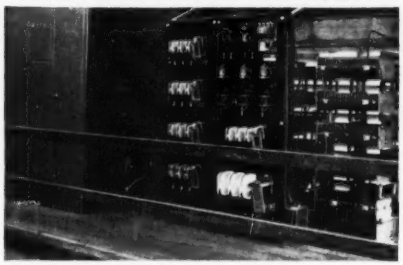
Morrison-Knudsen selects G-E drives to batch and place concrete at Oregon dam

To meet a tight work schedule at the Corps of Engineers' Lookout Point Dam, the Morrison-Knudsen Co. relies on modern construction equipment—electrified throughout by General Electric. This equipment, spearheaded by a Travelift cableway built by Construction Improvements Ltd., and Lidgerwood Industries Inc. is helping to place an average of 2000 yards of concrete per day.

Lookout Point, an earth-and-gravel-fill dam located at Lowell, Oregon, is a combined flood-control and power-generation project scheduled for 1953 completion. To heavy construction people, it provides one more example of the effective use of *electrified* equipment on jobs where smooth, dependable operation is an everyday "must."

Whether you buy or build construction equipment, you'll find it's safer, more flexible, and more efficient when electrified by G.E.—with skilled engineering help in application, installation, and service. Find out how this equipment and service can pay off for you by contacting your nearest G-E Apparatus Sales Office. General Electric Co., Schenectady 5, N. Y. 664-25

CABLEWAY is driven by this G-E 500-hp, 2300-volt wound-rotor motor. G-E drives also power conveyors, rock crushers, and batch-plant equipment.



CENTRALIZED CONTROL equipment for cableway includes (left to right) Limitamp high-voltage primary panel, secondary control, and cast-grid resistors.

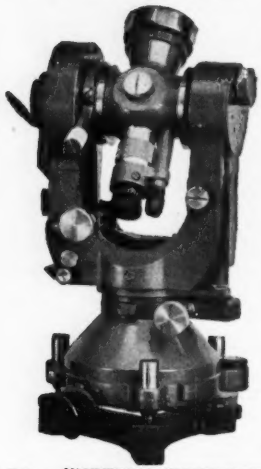
Engineered Electrical Systems for Heavy Construction

GENERAL ELECTRIC

NEW APARTMENT BUILDING IN THE QUAKER CITY—This magnificent new structure, overlooking Benjamin Franklin Parkway and Fairmount Park, in Philadelphia, is appropriately named Parkway House. It is 13 stories high, and has facilities for 227 families. Parkway House is smartly planned, and its cheerful, roomy apartment suites have from one to five bedrooms. It is completely air-conditioned, with individual humidity and temperature controls for each apartment. There are also roof gardens and private terraces, plus a dining room and cocktail lounge. Parkway House has an attractive facing of rose brick over its steel framework of Bethlehem Structural Shapes.

BETHLEHEM STEEL

Builder and Owner: E. J. Frankel; *Architects:* Roth & Fleisher; *General Contractor:* Stanwell Construction Co., all of Philadelphia; *Consulting Engineers:* Severud-Elstad-Krueger, New York; *Fabricator and Erector:* Lehigh Structural Steel Co., Allentown, Pa.



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ENGINEERING NEWS-RECORD

Member

Volume 149 November 27, 1952 No. 22

WALDO G. BOWMAN
Editor

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ROBERT F. BOGER
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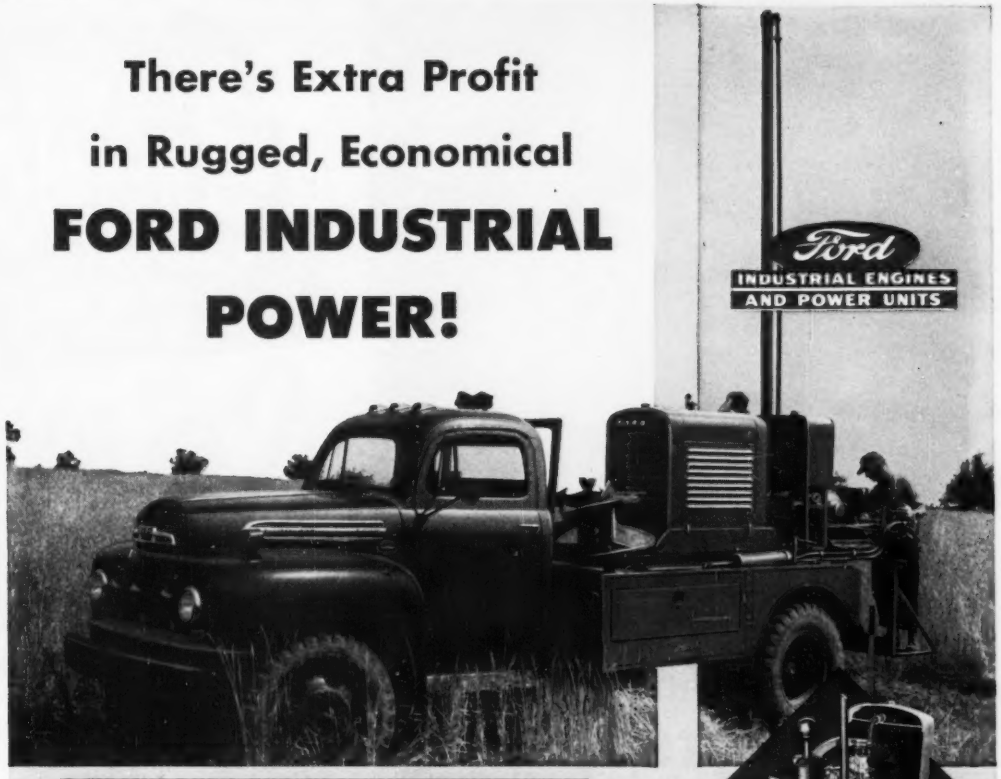

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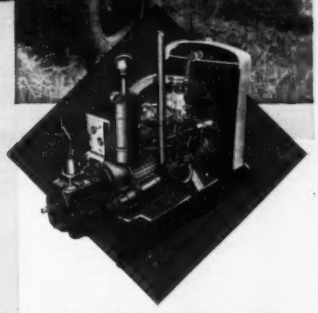

FORD "254" 6-CYL. ENGINE

A Ford 6-cyl. closed Industrial Power Unit with 4-speed transmission is shown above mounted on a Ford Truck to power the efficient Sterling Earth Boring Machine, distributed by the Wyoming Valley Equipment Co., Inc., Wilkesbarre, Pa.

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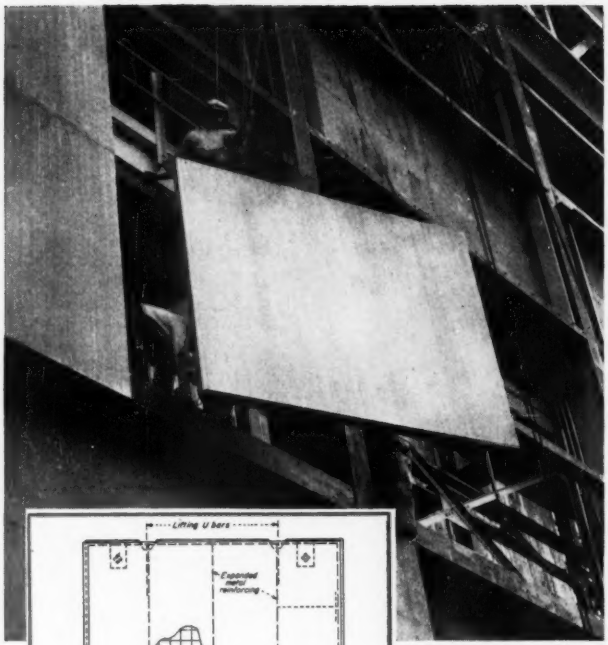
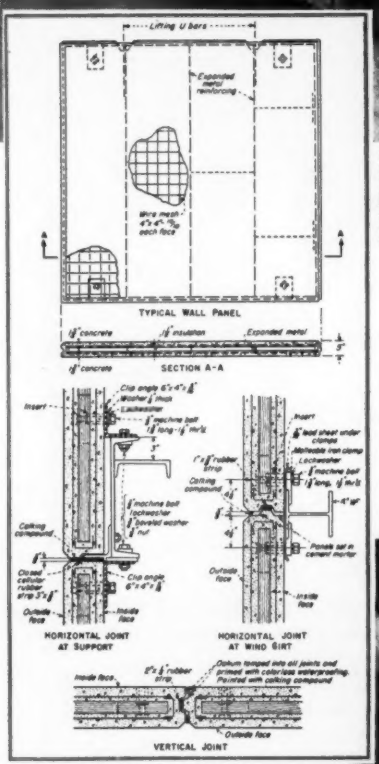


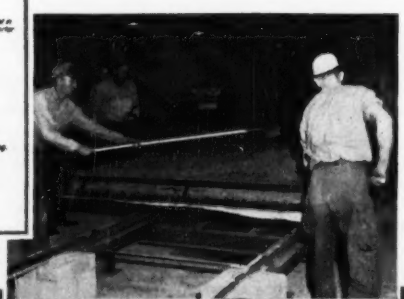
Walls of this huge industrial plant were erected at the rate of five 8' x 10' panels an hour, at a completed wall cost of approximately $2.25 to $2.50 per sq. ft. Cost varies slightly depending on shipping distance from plants, standardization in panel sizes, etc.



Above: Wall panel details show panel construction and method of joining slabs. Courtesy of Ford, Bacon & Davis, Inc.

Whatever the weather—cold or hot, wet or dry—you can start that new plant, now, and finish it ahead of schedule, with MARIETTA "sandwich" wall panels . . . and trim costs as much as 30% under comparable masonry construction! Yes, these large, easy to handle panels actually cut labor and application time . . . close in large areas quickly . . . bolt directly to building framework and go up in half the time required to erect conventional walls.

MARIETTA panels consist of two layers of reinforced concrete separated by rigid insulation . . . concrete tests 4,300 psi in 7 days . . . although only 5 inches in thickness, they give an insulating (U-value) of 0.14 compared with .36 for 12" of brick. Panels have uniform appearance and pre-finished exterior and interior surfaces.



Let our Engineering Department help you speed the construction of your next building and cut labor costs. They'll supervise the design, production and erection of MARIETTA precast, concrete insulated wall panels specifically developed for your needs. Write now for their help.

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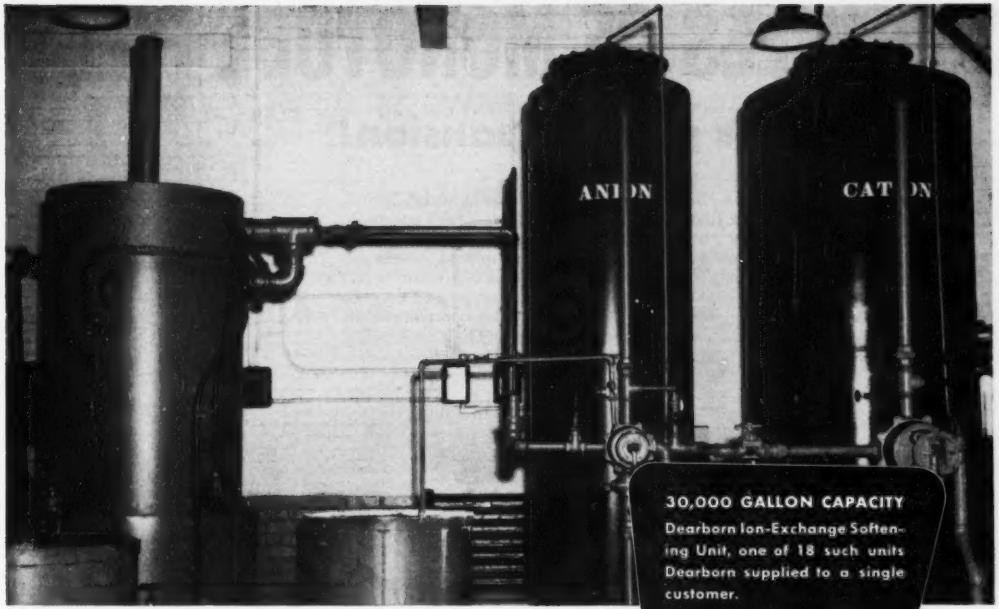
THE MARIETTA CONCRETE CORP.

MARIETTA, OHIO



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New high capacity exchange minerals make it possible to double, sometimes triple, the capacity of existing systems. Investigate by writing for Dearborn Bulletin 1100 on Dearborn High Capacity Cation Exchange Resin.

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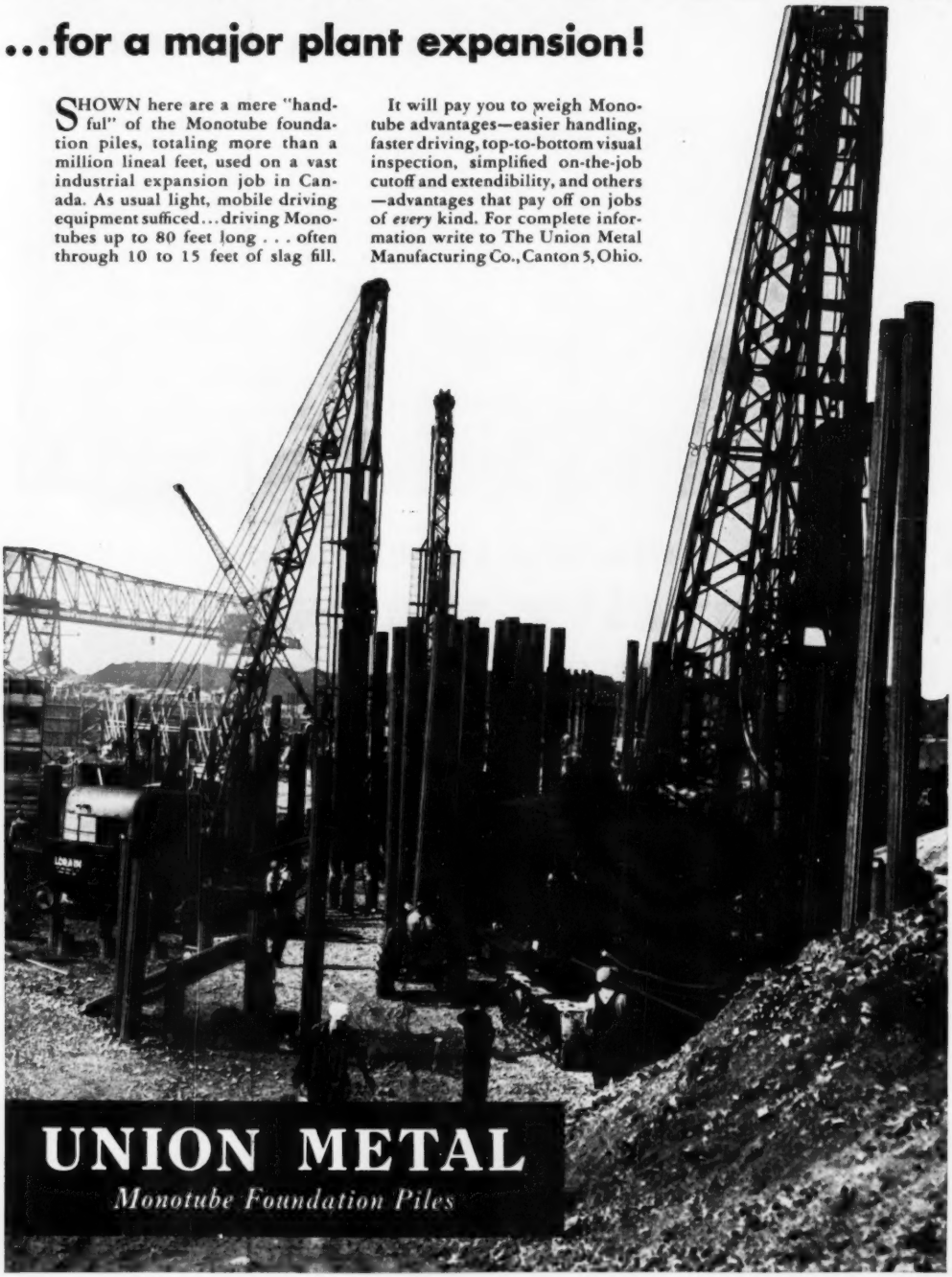
It will pay you to weigh Monotube advantages—easier handling, faster driving, top-to-bottom visual inspection, simplified on-the-job cutoff and extendibility, and others —advantages that pay off on jobs of *every* kind. For complete information write to The Union Metal Manufacturing Co., Canton 5, Ohio.



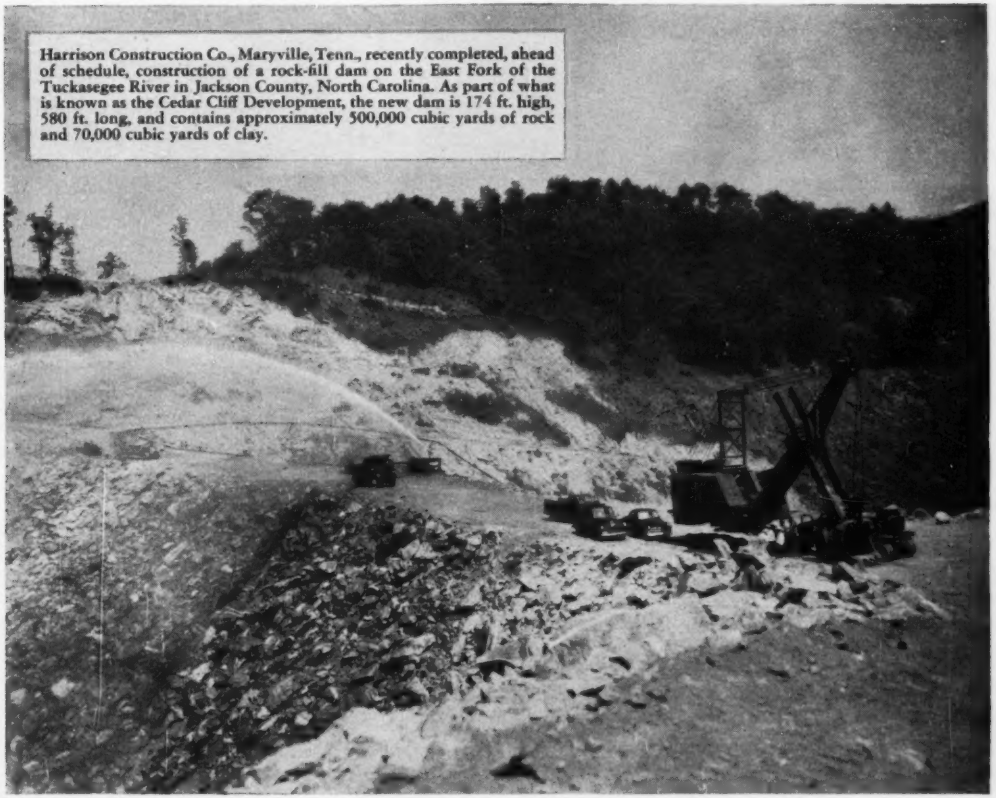
UNION METAL

Monotube Foundation Piles

GULF PRODUCTS *and* FINE SERVICE

keep equipment rolling

on North Carolina Dam Project



Harrison Construction Co., Maryville, Tenn., recently completed, ahead of schedule, construction of a rock-fill dam on the East Fork of the Tuckasegee River in Jackson County, North Carolina. As part of what is known as the Cedar Cliff Development, the new dam is 174 ft. high, 580 ft. long, and contains approximately 500,000 cubic yards of rock and 70,000 cubic yards of clay.

JUST about No. 1 requirement for a smooth running job is smooth running equipment. That's why so many leading contractors, like Harrison Construction Co. for example, prefer the petroleum products identified by the familiar Orange Disc.

They have found that Gulf lubricants provide better protection for every gear and bearing; and that Gulf fuels help insure top engine performance.

Gulf lubricants and fuels work as a team to help contractors get more hauls, fewer overhauls, and bigger profits!

Let us discuss with you how Gulf products and fine service can help you on your next job. They are available to you through more than 1400 warehouses.

GULF

YOU CAN BE SURE ... IF IT'S

Westinghouse

SYSTEM PLANNING

Chrysler Building East, center above, reflects modern trend in building design.

Reinhard, Hofmeister & Walquist, Architects; Guy B. Panero, Consulting Engineer; Turner Construction Co., General Contractor; Fishbach & Moore Inc., Electrical Contractor.

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When the original Chrysler Building was constructed, Westinghouse helped engineer the most modern electrical system available at that time. Since then, it has given 15 years of outstanding service—a vital requirement for this massive, 77-story structure.

When Chrysler Building East was built, Westinghouse *again* assisted the owners, engineers and contractors to plan a modern distribution system—served by the utility network. Its main feeders are protected by a Westinghouse Standard Building-Type Distribution Switchboard, and the power and lighting circuits are protected by Westinghouse Circuit Breaker Panelboards. Special lighting panelboards provide tenant submetering.

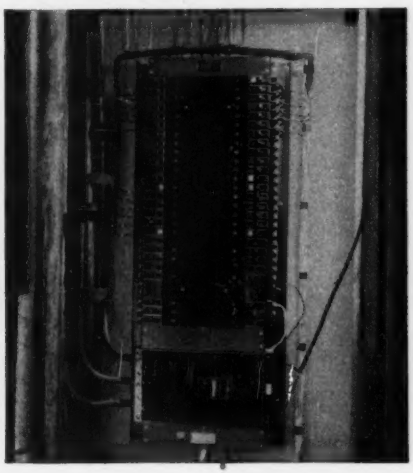
This system assures maximum safety and low-cost maintenance, since there are no live parts exposed to personnel . . . no fuses to replace. It can be laid out and installed easily.

CONSIDER THIS: A building's distribution system is a vital design consideration. It must be treated as an integral part of the over-all design . . . and be *coupled* with distribution equipment of the highest caliber.

Westinghouse offers you assistance on both of these requirements—and backs it with years of experience. You benefit by getting more freedom in design techniques . . . by providing your customer with the best possible system for *his* building.

There is one best system of distributing electrical power for *every* building. Let Westinghouse help you select it on your next job. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-94958

Westinghouse Standard Building-Type, Metal-Enclosed, Dead-Front Switchboard has full-length pull box at top. This permits neat arrangement of the many large conduits.



Westinghouse Lighting Panelboards are NLAB type with Quicklag® circuit breakers. They are specially designed so that part, or all, of a floor can be metered separately.

Look for 'em under the heavy stuff!

Watch when the really heavy loads move out. The chances are—there's an International underneath.

Across the country, construction men rely on the dependable power of International Trucks to handle the tough jobs. They like the extra years of service they get—the low maintenance and operating costs. And they like the comfort and handling ease of an International.

If these advantages fit into your operation, better see your International Dealer or Branch soon.

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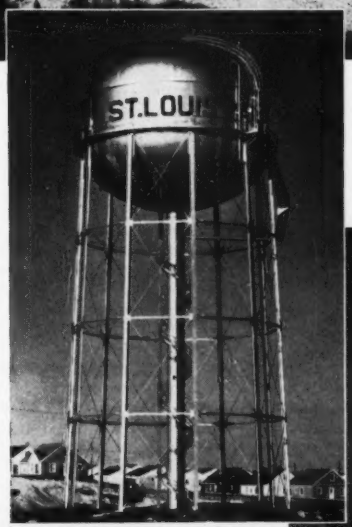
International L-200 series available in GVW ratings from 24,000 to 29,000 lbs. 142, 157, 175, 193-in. wheelbases.

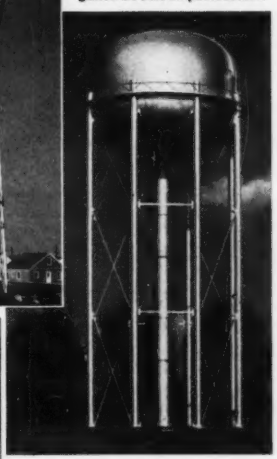
McCandless Twp. (Pittsburgh District) Pa. 1,500,000 gallon Radial Cone Bottom tank

A few of many tank types for varying needs



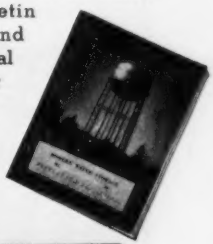
St. Louis Park, Minn. 1,000,000 gallon Double Ellipsoidal tank

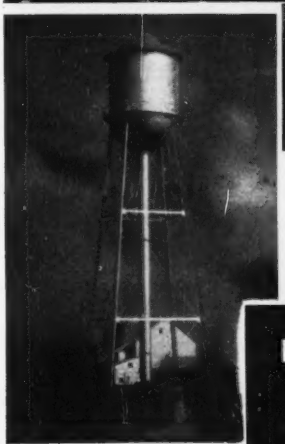
North Madison, Ind. 500,000 gallon Double Ellipsoidal tank



PITTSBURGH• DES MOINES ELEVATED STEEL TANKS

Three of a number of Pittsburgh-Des Moines Elevated Steel Tank types are pictured here. • For a complete discussion of the broad range of P-DM elevated tanks available, send for our informative 28-page Bulletin 101. You'll find there is an ideal type and size for your requirement. • A Pittsburgh-Des Moines representative is available at your request, to fully discuss your problem with you.





Arlington, Ohio. 100,000 gallon Hemispherical Bottom tank

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Plants at PITTSBURGH, DES MOINES and SANTA CLARA

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Another example of FLOCKHART complete design and engineering service on guaranteed construction castings

READER COMMENT

Flexible concrete revetment

Sir: In the article "Vacuum concrete revetment used to line French canal" (ENR Sept. 25, 1952, p. 53), the term "V Type mats" as used seems somewhat misleading, as the units themselves are not V shape, but similar to the plain flat type mat units used on the Mississippi River except that they have double-bevel edges.

The accompanying photo of my articulated flexible concrete mattress known as Flex-V-Mat illustrates a unit that has a definite V shape. Each unit is 12x36x4½" and weighs 125 lb.

Anchorage is an important factor for revetment, and with the V type mat this is accomplished by the embedment which each V-concrete unit attains in the foundation material. The narrow edge also facilitates hinge action and therefore flexibility.

W. R. PIERSON
New Orleans, La.

Prestressing gains ground

Sir: Your story, "Maneuvers in Oklahoma," ENR Sept. 18, p. 26, while factually correct as far as it goes, emphasizes the need for a more complete explanation of the issue.

On Aug. 30, this company was contacted by a member of the firm of De Leuw, Cather & Co., consulting engineers for the Oklahoma Turnpike Authority, who inquired if we were interested in working with them on the design and construction of a number of bridges necessary for the opening of the turnpike to traffic. This firm and ours worked out the sections, spacing and approximate costs of prestressed concrete beams required to replace the steel members in the original designs. This information was then submitted to the Oklahoma Turnpike Authority, which met on Sept. 10 and voted, as you have reported, to authorize this firm to negotiate contracts with the prime contractors on 11 bridges for prestressed concrete beams.

It should be pointed out the steel for all 11 bridges was to have been supplied by Capitol Steel and Iron Co. of Oklahoma City. This firm failed for some reason to succeed in placing mill orders for third-quarter rolling of this steel, although it had been authorized by the National Production Authority. On the day of the meeting of the turnpike authority, Capitol Steel had been positive in its assertion that the steel was not available; however, within 48 hours after prestressed concrete was approved, mill orders were "suddenly accepted" for the necessary steel for a third-quarter rolling. As a result, the turnpike authority decided to continue with plans for structural steel.

A closer examination of the situation will reveal some interesting facts not shown in your article, which stated that the switch to concrete would result in a price increase of about $40,000. To place this increase in proper perspective, it must be understood that all of the bridges involved were originally designed for maximum economy in steel construction, in most cases utilizing continuity. Inasmuch as the substructures of several bridges and the grading of the roadway were nearing completion, it was highly desirable to retain both the spacing and the overall depth that had been set for the steel structures. It is remarkable that on ten of the eleven bridges both depth and spacing were maintained in simple concrete beams. But this, of course, did not lend itself to economical construction.

It must also be kept in mind that the prestressed concrete beams for 11 bridges, some 500 members in all, were to be made in the relatively short period of 14 weeks and in unfavorable weather, which also led inevitably to an increase in cost over the normal expectation. The anticipated increase was also due in part to a "scarce factor" of about 10%, included to compensate for the fact that none of the seven contractors involved had had experience with prestressed concrete.

From the foregoing facts, it must be obvious that prestressed concrete enjoys a highly competitive position with structural steel in the shorter spans of bridges, in this case ranging from 30 to 60 ft. The fact that prestressed concrete could be substituted in bridges designed exclusively for structural steel is evident proof that given an equal opportunity, and when designed for maximum economy, it will in every case show an overall saving of 20% or greater. It is also apparent that this is obvious to the United States Steel Co., or that company would not have re-shuffled its rolling

(*Continued on page 15*)

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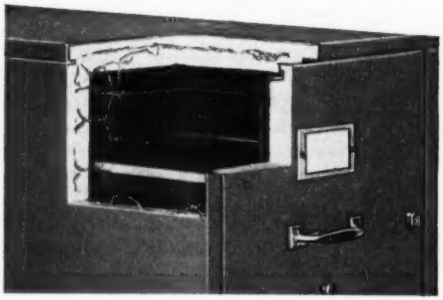

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Emphasis on composting

Sir: We read with interest your account of the Frazer-Eweson compost factory in Bay Shore, L. I., and wish to commend you on a fine job.

However, we feel there are several points that can stand emphasis. Unlike any other process that we know of, the Frazer-Eweson process disposes of garbage and produces a high grade of compost without nauseating odors usually associated with garbage disposal, without use of large tracts of land, and without the nuisance of smoke.

This is important to a community since the plant can be located close to or within the community without offending even the most fastidious. Also important to the community is the fact that garbage can be disposed of in this manner at the lowest cost to the taxpayer.

We also believe that it is only fair to point out to your readers that the compost factory you described was constructed by the Lowe Construction Co. Inc. of Stony Brook, L. I. from plans prepared by Lambert & Dell'Abate, consulting engineers of New York City.

Frank Lambert
Lambert & Dell'Abate

CALENDAR

Society for Experimental Stress Analysis, Hotel McAlpin, New York City, Dec. 3-5.

American Association of State Highway Officials, annual meeting, Municipal Auditorium, Kansas City, Mo., Dec. 10-12.

Illinois traffic engineering conference, University of Illinois, Urbana, Dec. 11-12.

National Association of Home Builders, Conrad Hilton Hotel, Chicago, Ill., Jan. 18-22.

Mason Contractors Association of America, Sherman Hotel, Chicago, Ill., Feb. 1-4. California Street and Highway Conference, University of California, Berkeley, Feb. 4-6.

American Road Builders Association, Hotel Statler, Boston, Mass., Feb. 9-11.

Ohio Water Clinic, Ohio State University, Columbus, Feb. 19-20.

Illinois Conference on Highway Engineering, Urbana, Feb. 24-26.

Industry conference on air pollution abatement, Hotel Statler, Detroit, Mich., Feb. 26-27.

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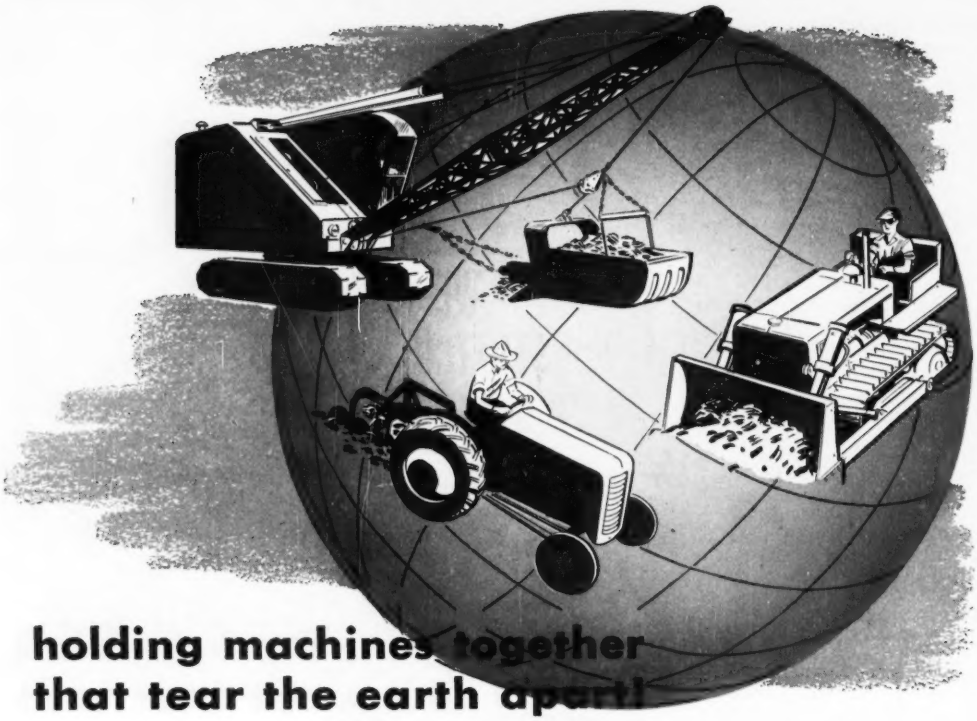

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SQUARE AND HEX MACHINE SCREW NUTS
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• **Politics snags industrial development**—Bethlehem Steel is getting ready to go on a potentially huge mining and construction venture in Brazil—if it can untangle Brazilian legal and financial requirements.

There has been no official announcement, but what is in the wind is this: A brand-new and reportedly rich manganese deposit has been located in the wild jungles of the Amazon in Brazil's Ampa area. To develop it, a port would have to be built on the river at Macapa, a railroad from Santana to Serro do Navion, a mill and processing plant, workers' village and the like. Some idea of the money cost comes from an original $35-million Export-Import Bank loan a year ago to finance exploration and initial development.

The kicker is the Brazilian law that requires a local corporation for such developments, and in the case of a basic natural resource, Brazilian control of such a corporation. Bethlehem is not pleased with that thought, wants assurance that it can protect its investment.

• **No new Greenland bases**—You can discount those news reports about more airbase work in Greenland. Air Force flatly is not planning any new bases.

But the excitement over the Greenland work has brought out a couple of interesting facts: Army Engineers will complete the work at Thule (ENR Oct. 2, p. 21), and develop and rehabilitate three existing bases with help of U. S. and Danish contractors—one of the bases being far north of Thule; the second tallest man-made structure in the world is a 1,212-ft steel-frame radio tower at Thule, standing on a ball-and-socket base and built in a record 25 days.

• **Whose water?**—Although Army Engineers hastily have tried to scotch the matter, there is a states rights fight in the making over ownership of water behind federally operated dams.

Kickoff may have been Texas' Gov. Allan Shivers' statement at the Southern Governors' Conference that Texas will ask Supreme Court decision on the question of water control. Shivers obviously was prompted by the serious drought in his state (ENR Nov. 6, p. 51) which recently forced rice growers on the Brazos River to "borrow" water from the new Whitney Reservoir—but on the promise that an equal amount of water (about 50,000 acre-ft) would be returned from the state's Possum Kingdom Reservoir.

Engineers at the meeting pointed out there is no question of state ownership of waters behind federal dams. It's only a question of control.

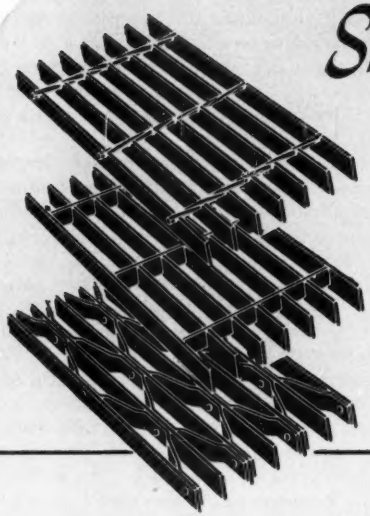
• **Investigation in Germany**—There could be something fairly nasty for the construction industry as a whole in the burgeoning investigation of what happened to millions of dollars of defense contracts in West Germany.

Although German and U. S. authorities have been very guarded in comments on the investigation, reporters have said that two American engineers have been arrested and an Army officer is under investigation. The key point seems to center on construction contracts.

• **Keep trying**—Not at all daunted by refusal of the National Electrical Contractors Association to join in seeking a solution of the bid shopping problem on private work (ENR Nov. 20, p. 27), the Associated General Contractors has again held out the olive branch.

In a letter to NECA, AGC's President Horner reiterated his organization's offer to cooperate.

But NECA—still driving to implement its conviction that national legislation must be obtained—gives no evidence of joining the general contractors. It fears that any joint committee with AGC would be used as an argument against need for legislation by Congress, on the ground that the industry can work out its own problems.



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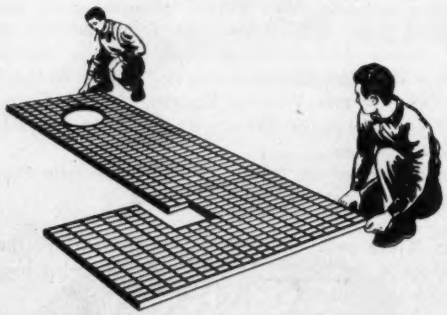

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ENGINEERING NEWS-RECORD

New construction policy takes shape in Washington

- **Only a few federal building programs will be cut**
- **Most will continue to forge steadily ahead**

Now that the smoke of the election has cleared, the direction of the new Republican administration and its policies on construction already are beginning to shape up.

Construction men and engineers will feel more at home in Washington after Jan. 20. They can look forward with new-born confidence to getting a fair hearing for their side of the story. To a degree, the changed atmosphere will show up in all the departments and agencies that handle construction programs.

The new administration is not likely to upset or suddenly curtail programs that have been generally approved by both parties in years past. But Dwight D. Eisenhower has shown, by the Cabinet members he has selected, that Republican aims are to cut government spending without necessarily impairing security or dropping federal aids to the national welfare.

• **Here is the outlook**—Only a few programs seem subject to curtailment: Public housing, federal power projects and the Tennessee Valley Authority are three examples of programs that might be reduced in the next few years—but not much.

Highways, flood control, navigation, reclamation and similar public works programs have the endorsement of the new administration. River projects may be pruned a little, but not much. Pruning attempted cannot begin to take effect until 1954.

Military construction almost certainly will move ahead in close accord with present defense plans. Appropriations may be reduced, but carry-over money in the hands of the military services will keep their programs going (ENR Nov. 6, p. 21). A soldier President is not expected to cut down on expenditures for needed military works.

Direct federal hospital building undoubtedly will taper off as the Veterans program is finished up. But a G.O.P. Congress is likely to go along with extension of Hill-Burton aid to state and local hospitals.

• **How it will work out**—Attitude of the Eisenhower Administration on important construction programs is indicated by two of last week's nominations for the Cabinet.

In Charles E. Wilson of General Motors, Eisenhower chose a top-rank industrial executive to head the Defense Department. Wilson may be expected to accelerate the drive for business organization and methods in the department. He probably will strongly support programs like those recently started by the new Director of Installations to coordinate construction work of the three services and to simplify and standardize designs of structures used by all three.

Necessity for new military projects will have to be demonstrated to Wilson before he will approve them. But, once he has been convinced, he will back requests to Congress as strongly as any secretary in the past.

With the appointment of Gov. Douglas McKay of Oregon to be Secretary of Interior, Eisenhower picked an executive with a working familiarity of the resources in the West. He also understands the thinking of men who have been active in power, reclamation, irrigation and other projects in relation to federal domain.

GOV. McKAY of Oregon, new Interior Department chief, takes a clear stand.

The McKay stand is that private utilities should be given first chance to develop water resources. When the job is too big for private investors, the federal government should take over. But the government should not have full say on how to develop or run the projects. There should be a maximum of federal-state cooperation. By reputation, he holds his decisions until he has all the views.

During the election campaign he stated that multi-purpose dams would continue to be built on the rivers of the Pacific Northwest under a Republican administration. After his appointment last week, Paul J. Raver, Bonneville Power Administrator lauded the appointment as selection of a man who has "evidenced vision and wisdom" in seeking solution of Northwest problems.

• **Controls squeeze**—Recommendation for relaxing materials controls Jan. 1 is up for decision before NPA Administrator Richard A. MacDonald. Construction men hope for an announcement next week. The relaxation would allow moderate increases in self-authorization of steel for construction projects.

The whole material controls program, now squarely in the center of an anvil of industry opposition, will soon feel the sledge of new administration policy.

With the Associated General Contractors and the American Institute of Steel Construction already on record for rapid decontrol, the Steel Products Industry Advisory Committee last week handed NPA a decontrol plan to start "immediately" that would terminate allocation of steel to civilian users on April 1.

The committee, chairmanned by Richard F. Sentner, executive vice president of U. S. Steel Corp., warned that if the present rigid controls are continued, a decline in the steel industry operating rate will result.

NPA was told that regardless of what its pencil-work showed on the availability of steel, the losses of steel production for defense due to this year's steel strike have already been made up. The committee added that next year the supplies of steel available for all other uses, after military and

atomic energy demands have been met, will be 31% greater than they were this year.

The present NPA program calls for scrapping of controls except for military and atomic production by June 30. The committee urged that the date be shoved up to April 1.

A glimpse of new administration policy on controls was provided last week by Rep. Jesse P. Wolcott, who will probably take over chairmanship of the important House Banking and Currency Committee. Wolcott told the Southwestern Regional Conference of the National Association of Home Builders in Oklahoma City, they could expect an end of all government controls.

Price and wage controls are about over. Congress is dead set against them. And most government economists agree that controls won't be needed beyond the present expiration date of April 30.

• **Housing outlook**—With home building starts next year expected to run as high as 1,100,000 or better, Wolcott also made predictions on housing.

"I am inclined to believe we will put more emphasis on indirect rather than direct controls. . . . The Congress will undoubtedly let price, wage and rent controls expire on April 30."

Wolcott predicts Congress will up interest rates on VA loans, describing the present 4% rate as "not realistic." He told the NAHB men he was sure they would find little interference from the new administration. Instead they could expect cooperation from the new administration in aid that will supplement, not supplant, the industry.

Fannie Mae, (the Federal National Mortgage Association) will undergo some modification and curtailment. Congress won't be in a mood to vote more money for the government's secondary mortgage market. Fannie Mae has enough now to support the program of advance commitments for mortgages on privately built defense housing and military housing.

The defense housing program may prove to be less than has been talked about; it may not reach 150,000 units. About 95,000 units have been programmed to date. Wherry Act military housing will run along at about the current rate—maybe 20,000 to 30,000 units a year. Legislation for both defense housing and Wherry housing expires June 30. You can be sure Congress will vote extensions.

Public housing will continue in controversy. Congress would be willing to cut the permissible rate of starts on federally aided local low-rent projects below the present 35,000 a year. And the rate may be dropped as low as the 5,000 a year that the House has twice voted.

• **Other programs**—Private industrial is certain to drop, but commercial will rise by a couple of hundred million dollars. Utility construction will go up at least 10% overall, as a result of increased activity in electric power and gas facilities.

In public construction, military and naval work next year should go up appreciably—possibly 15%. Military construction has been lagging; it should speed up some in 1953.

Construction outlook under G. O. P.

G.O.P. control of White House and Congress puts new light on government impact on construction. Here's a quick check list on the outlook for the next 12 to 18 months.

• **Government and business**—Eisenhower can't do much about big government for about 18 months. Programs built up under Democrats during last 20 years can't be cut back quickly.

• **Construction outlook**—Total volume of construction should run as high as this year. Federal spending for construction will continue close to current levels.

• **General business outlook**—Experts predict prosperity for next year; the President-elect would use tax cuts and other measures to prevent a recession.

• **Taxes**—Excess profits tax to expire June 30; automatic 10-11% cut in personal income taxes may be effective for 1954, perhaps earlier.

• **Price controls**—Almost sure to expire April 30.

• **Materials controls**—Allocations for civilian uses to come off in April. Military priority on materials and equipment to continue after June 30.

• **Credit controls**—FHA and VA to continue as before. Interest rates may go up. FNMA mortgage-buying will last through summer. G.O.P. may look for substitute for FNMA.

• **Private housing**—Starts expected to reach the 1,100,000 mark.

• **Public housing**—Starts likely to be reduced from this year's 35,000.

• **Military construction**—Expenditures won't be reduced despite cuts in new appropriations.

• **Army civil works**—Dams, river and harbors spending will continue at about the same rate.

• **Reclamation**—Programs under way assure continued expenditures. New projects apt to fare as well under G.O.P. rule as Democrats. Exception: big power dams. Private development will be encouraged.

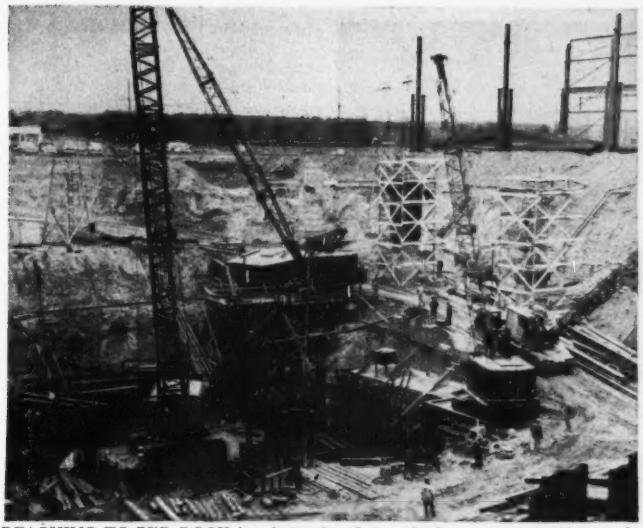
• **Highways**—Spending will increase, probably by more than 10%. Fight over federal aid to toll roads will get hotter.

• **Community facilities**—Federal aid to schools, hospitals, and the like probably will run to same yearly totals.

• **Industrial construction**—Despite drops in steel and aluminum expansion, declines in transportation equipment plant construction, and machinery—other expansions in defense supporting industries are expected to swell the total volume over this year's.

• **Utilities construction**—Electric power construction should be up by about 15%.

• **Oil and gas facilities**—Expected to rise about 5%.



REACHING TO BED ROCK for placing foundations for heavy presses, a crane works on a platform 60 ft below plant surface. Steel sheetpiles enclose deeper excavation.

Air Force's heavy press program holds promise for construction

The Air Materiel Command last week disclosed construction details on the first and one of the biggest of 17 forging and extrusion press installations—the beginning of a four-year program to cost nearly $400 million.

Opened to press inspection were the foundation work and structures that will house one 50,000-ton and one 35,000-ton forging press at the Wyman-Gordon Co. plant in North Grafton, Mass.

It is a $42-million installation. When completed, the presses (built by Loewy Hydropress Co.) will squeeze one- or two-ft cylinders of aluminum and magnesium into complete structural assemblies for aircraft. Because one such forging may make unnecessary as many as 250 riveting and assembly operations, the new presses are expected to speed up assembly line production of jets.

Construction of the foundation and structures to house the installation will cost between $25 million and $28 million. Applying this ratio, the total Air Materiel Command program will involve some $260 million in construction and $140 million in equipment and machinery.

In addition to the Wyman-Gordon installation, these projects are on the books:

- Aluminum Co. of America will soon make an announcement on construction of one 50,000-ton and one 35,000-ton forging press at Alcoa's Cleveland works, in addition to a 15,000-ton forging press now in operation there. Also scheduled is one 20,000-ton and one 13,200-ton extrusion press, the latter now being installed by F. H. McGraw Co. at Alcoa's Lafayette, Ind., works.
- Kaiser Aluminum and Chemical Co. last week announced construction is under way on the foundation for one 50,000-ton and one 35,000-ton forging press at its Newark, Ohio, plant. It will build also one 8,000-ton extrusion press.
- Harvey Machine Co. will install one 35,000-ton and one 25,000-ton forging press, and one 20,000-ton and one 8,000-ton extrusion press.
- Reynolds Metals Co. will construct one 12,000-ton and one 8,000-ton extrusion press at Torrance, Calif.
- Curtiss-Wright Co. will install one 12,000-ton extrusion press at Buffalo, N. Y.

• New frontiers—Ground was broken in June last year for the Wyman-Gordon project, the pioneering effort. No one had ever tried anything quite like this before. It is the largest installation of its kind in the world.

The Nazis got a head start on the world during World War II. The Russians have not been doing badly with a 33,000-ton press—the world's biggest to date—which they took from the Germans after the end of the war. This contrasts with an 18,000-ton press, operating in another section of the Wyman-Gordon plant, which is the free world's biggest until now.

Because of the urgent defense demands, the Air Force has not been able to wait to design the buildings around the presses. Instead it ordered a swift go-ahead, aware that some of the progress would depend upon trial and error.

The job of blazing the trail fell to Gilbane Building Co. of Providence, R. I., chosen from half a dozen leading construction firms. Gilbane went to work even before the blueprints were completed.

Wyman-Gordon knew the weights it wanted lifted, the spans between columns. So Gilbane was asked to estimate and get started. At the outset it was obvious that this was no ordinary factory building. The loadings the engineers asked for were the heaviest Gilbane—or the Air Force—had ever encountered.

To get the site in shape, Gilbane evacuated 700,000 cu yd of earth, filled another 500,000 cu yd—enough dirt to fill a bumper-to-bumper convoy of 5-cu yd trucks from North Grafton to Milwaukee. Total earth moved was 1,500,000 cu yd.

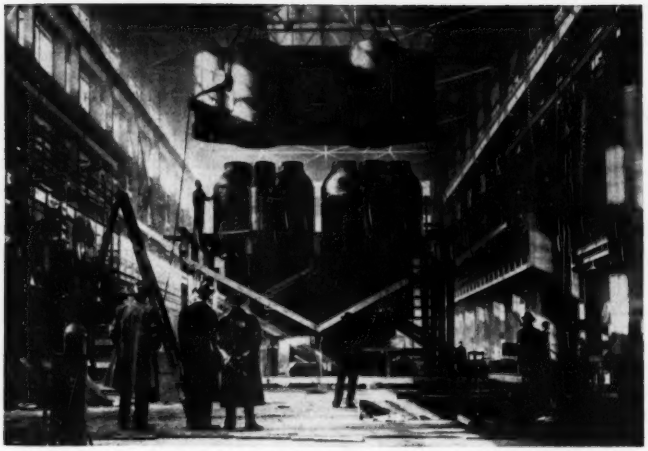
Among other things, this big earth-moving job called for digging out the bed of a geological lake and replacing the 22,000 truckloads of peat with a greater amount of gravel, rolled and compacted.

• Reaching rock—The most absorbing aspect of the job is the foundations for the big presses. Because any settling would be fatal to their operation, the presses are being set on concrete foundations reaching 106 ft to solid rock.

Gilbane engineers considered several methods of getting down there. But to save time—the vital consideration in every aspect of the job—they chose an open cut in combination with steel sheathing at the lowest depths. It is one of the deepest open cuts ever attempted in foundation work.

Using a 2-cu yd, a 1¼-cu yd and two 1-cu yd shovels, Gilbane trucked out an inverted pyramid of hardpan and boulders 60 ft deep. Then steel piling was driven the rest of the way and air spade and hand-mucking work was begun.

An 80-ft head of water (starting at a depth of 12 ft below grade) required an elaborate system of wellpoints. A header circles the pit with wellpoints on 2-ft centers at each 15 ft of depth. In all, four stages reach down to a depth of 70 ft outside the steel sheath coffer-dam and one stage circles inside the coffer-dam 86 ft below grade. In addition, some deep wells have been sunk within the coffer-dam but little



LARGEST FORGING PRESS in the free world until the 50,000-ton installation now under construction, is the 18,000-ton model installed in 1946 in another part of the Wyman-Gordon plant by F. H. McGraw Co.

artesian water has been encountered.

Now at rock, the project has run against a laminated stone condition not wholly anticipated by test borings. For 100 to 115 ft below grade, a fractured ledge is interlaminated with sand and silt. Gilbane Project Manager Thomas E. Battles has suggested drilled-in caissons locked into underlying rock, but this suggestion still awaits approval.

• **Building up**—Once the excavation is completed, the box-like reinforced concrete foundations for the presses will begin to rise. Walls will be 5 ft thick with heavy haunches 20 to 30 ft below the finished floor. The presses will sit on these haunches in 70-ft pits, sealed off by pressure-resisting slabs, 1-ft crushed stone, and 2-ft finished floors.

Adjacent to these pits, intensifier rooms will have floors 40 ft below grade. An elevator will connect with all levels.

Although concrete spread footings are used for supporting roof and craneway columns in other sections of the plant, in the area adjacent to the press pits, columns are carried on drilled caissons socketed into bedrock.

To complete this series of subterranean supports, a series of massive horizontal reinforced concrete struts lock the caissons into a rigid frame.

In the area of the presses, two 100-ft truss spans are planned with a 50-ft span between. Beneath the 100-ft spans, the horizontal below-surface struts will be 10 ft high. Beneath the 50-ft span the struts will be 2 ft high. In addition, horizontal reinforced concrete straps will tie the new structure to the foundation of the already existing building and will help bear part of its weight.

• **Construction expedited**—An advantage of using caisson-type footings, Gilbane engineers explain, is that steelwork can go up while work on the press foundations continues. Chords of the 100-ft truss spans over the press foundations are designed to be handled by 120-ft cranes reaching from the edge of the excavation. This avoids the need for guy derricks.

Adjacent to the big forge shop, a pump house is being erected on still a third type of foundation, a 30-in. heavily reinforced concrete slab. Above this slab a 1-ft thick concrete floor will be cast on an 18-in. gravel base. In all, seven 1,500-hp horizontal triplex pumps will maintain 4,500 psi pressure for use in the big presses. Two compressors will supply air under pressure to maintain accumulator bottle heads.

Some of auxiliary utility projects in themselves are sizable jobs. Electrical subcontractors are reinsulating a 66,000-v utility high line to step this capacity up to 110,000 v. From a master substation, this power will be distributed underground through tunnels, ducts and interchanging manholes to substations in all buildings.

A new boiler plant will house three new 70,000-lb boilers. A separate sewage disposal system will provide full secondary treatment for sanitary sewage. Separate leaching fields are provided for dirty water, oils, graphite and caustic used in the forging process. Ejector systems will raise sewage into main lines to carry it to treatment plants.

A balanced natural gas-propane installation will be the largest industrial gas installation in New England.

Gilbane has constructed or will construct the following buildings at the Wyman-Gordon plant: process and maintenance building, forge shop, boiler plant, administration building, electrical sub-station, two pump rooms, a sewage disposal plant, an outside overhead craneway, foundations for the two presses, a 75,000-gal water tower, a control house; included is 115,000 sq ft of office floor space. For listing of construction see table below.

• **Kaiser building**—Construction workers have begun pouring the foundations for one 35,000-ton and one 25,000-ton forging press at Newark, Ohio, it was disclosed last week. The work will cost $17 million exclusive of the presses, and is expected to be completed in 15 months.

Some 104,000 cu ft of earth were excavated for the 79-ft deep press foundations. The presses will be housed in a building covering 360,000 sq ft on a 35-acre tract at the Kaiser plant site.

• **Alcoa press**—In May this year, Alcoa unveiled a 15,000-ton forging press, at its Cleveland works, which had been made in Germany during World War II, part of a $13.2-million project. The foundation required more than 1,000 cu yds of concrete.

Statistical summary of construction

Plant acreage—115 acres. Acreage under roof—23 acres. Total structures—13.

	Nov 1, '52	Completed
Earth excavated	550,000 cu yds	600,000 cu yds
Fill in place	610,000 cu yds	90,000 cu yds
Excavated	100,000 cu yds	120,000 cu yds
Depth of press foundation	60 ft	100 ft
Reinforcing placed	1,300 tons	6,000 tons
Structural steel erected	9,000 tons	16,000 tons
Railroad spurs length	5,000 ft	7,000 ft
Underground water lines for process water, drinking water and fire protection	11,000 ft	12,000 ft
Steel brought to project	13,500 tons	15,000 tons

Underground sewer and drainage electrical lines 23,000 lin. ft; total electricity 50,000 kva. Total worth of construction equipment $1 million.

Engineers tackle tough assignment supporting stabilized front in Korea

President-elect Dwight D. Eisenhower will find Engineer troops grappling with a tough job when he makes his Korean visit.

The Engineers always have more than enough to do in reinforcing combat positions and in improving supply routes and facilities behind the front. But with a stabilized front, the mission of the Engineers takes on a character somewhat different from a war of movement.

In broad terms, their two-fold military mission at all times is:

- To expedite and assist the movement of our own troops.
- To obstruct and make difficult any movement by the enemy.

Right now, the Engineers in Korea have the continuing job of making our front-line positions ever stronger—as nearly impregnable as possible. In this task, they are working every day installing mines and all kinds of devices that involve explosives, erecting barbed-wire defenses, building tank traps and obstacles, and digging and strengthening entrenchments.

At the same time, the Engineers have the job of training our other fighting forces in the best use of mines, entrenchments and similar defense measures. This training fits the non-Engineer forces to do a better job for themselves.

Another constant responsibility is Engineer intelligence. The Engineers don't have to inform the Army commander of the enemy's plans, but they do have to keep him informed of the enemy's capability to move. That information, of course, is based on the condition of the enemy's roads, bridges, etc. In a stable situation, it is highly important that this intelligence be as accurate and up-to-date as possible.

• The big job—In the whole area back of the front, the Engineers are constantly at work maintaining and improving the supply lines—highways, supplementary roads and railways. They rebuild and improve railway bridges and roadbed, and they open up alternate and feeder roads for the highway system. As a measure of the Engineers' success, Korea has a better road net today than before the start of hostilities in June, 1950.

The Engineers also lay out and build emergency and semi-permanent cantonments in Korea. Likewise, they are responsible for the maintenance of these troop cities; with a post or camp engineer in charge, and Army Engineers have the full responsibility for supplying potable water to all the forces. Frequently this involves water purification.

In addition, they have the job of constructing air bases and air strips, followed by full-time responsibility for maintenance.

An important function of the Engineers is the printing and distribution of maps. An army—such as the 8th Army in Korea—normally has a topographic battalion for field mapping and each corps in the army usually has a topographic company. The Engineers have special units for storing, issuing and distributing maps.

Special maps in small quantities are produced by the topographic companies and battalions. All these units are equipped to print and duplicate maps. Wherever possible, maps in large quantities are supplied through Army Map Service in Washington, D. C.

• Cold weather helps—Passing of the flood season and advent of freezing weather lessened some Engineer worries in Korea. The Engineers battled to get permanent high-level bridges in service before any of their temporary low-level structures went out in summer and fall floods. With the ground hard-frozen by sub-zero temperature, they can go where they please, and motor vehicles have more freedom of movement.

Assignment of Engineer forces in Korea cannot be disclosed, but it follows pretty much the normal Army organization pattern. That calls for an Engineer combat battalion which is unique in that it has four companies, employed as the commander orders. Normally, in a stabilized situation, the division would have three regimental combat teams with one Engineer company assigned to each team. This leaves the fourth Engineer company for divisional work.

Above the division level, each corps normally would have three Engineer combat groups. A group is a headquarters outfit that can take over and supervise in any emergency. Each of these Engineer groups has two or more combat battalions. The battalions are organized with three companies each —a dump truck company, a maintenance company, and a company for other work.

At the top of the organizational pyramid the 8th Army normally would

have attached to it Engineer combat and construction groups. The construction group is like a combat group except that it has a construction battalion with heavier equipment.

During an advance, a division with its Engineer forces is relatively self-sufficient to move and erect tactical bridges as it goes ahead. The Engineers with the corps then come along and improve the structures and supply lines. Finally, the Engineers attached to the Army can build permanent or semi-permanent bridges.

The Engineer, Far East Command, is Brig. Gen. A. D. Ogden, with headquarters in Tokyo. Until quite recently, Col. William C. Baker was Engineer, 8th Army. The name of Baker's successor, appointed by Gen. Mark Clark, Commanding General, Far Eastern Command, was not yet known in Washington last week.

• **Some lessons**—The Engineers have relearned some old lessons in Korea, as pointed out by Col. Paschal N. Strong, now Ohio River Division Engineer at Cincinnati. Strong was 8th Army Engineer until late last year. Among the important lessons:

• Supply is 75% of any major job. Put the best man available in charge of supply.

• Use native labor, contractors and material to the full.

• Don't over-demolish in terrain your forces may occupy again.

• There is only one thing to do with a floating bridge in a flood. Get it out of the water, or swing it to one side of the stream and lash it with everything you've got.

• Plank your railway bridges for traffic use in an emergency.

• Working troops and officers to exhaustion gains nothing and loses much.

• Heavy equipment is worth every bit of effort required to move it in. Heavy construction machinery pays its way every time.

Ground broken on link between turnpikes

Ground was broken last week for the Delaware River Extension of the Pennsylvania Turnpike. The ceremonies were held near King-of-Prussia at the present eastern teminus of the 327-mi toll highway.

With the same silver-plated shovel used to turn ground for the original turnpike 12 years ago, Gov. John S. Fine turned the first spade of soil on the extension which will run 33-mi through Montgomery and Bucks County to the Delaware River at Edgely. George M. Brewster & Son, Inc., has a $1.7-million contract to construct the first section.

Suit to open Ohio Turnpike bidding to asphalt interests nears climax

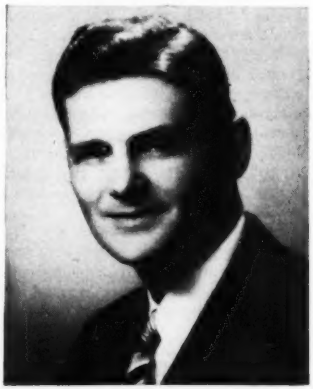
The clash between bituminous paving interests and Portland cement concrete interests over bidding for construction of the Ohio Turnpike is heading for a new showdown.

In September last year, the Ohio Turnpike Commission adopted a recommendation of its consulting engineers, The J. E. Greiner Co. of Baltimore, that Portland cement be used instead of asphalt paving (ENR Sept. 13, 1951, p. 28). Later, the commission rejected efforts by asphalt interests to submit competitive bids for the work.

That decision is now being contested in the Ohio Second District Court of Appeals. Two months ago, R. H. Shafer, president of the Ohio Road Improvement Co., which operates six asphalt plants along the route of the Turnpike, filed a petition in that court asking that the commission be required to take bids on asphaltic concrete construction as well as Portland cement concrete to expedite a finding, because paving contracts are expected to be let in December. The court appointed Robert P. Duncan as referee to hear the case.

Hearings before Referee Duncan are entering their fourth week and are nearing a conclusion.

• **Collusion charged**—Shafer's petition states that the bidding was limited to Portland cement concrete due to a preconceived plan between T. J. Kauer, former state highway director and now chairman of the Turnpike Commission, and the Greiner Co. It alleges that according to this plan the Greiner Co. was to recommend bidding on Portland cement concrete only, in exchange for Kauer's employment of Greiner as the consulting engineer.



T. J. KAUER, Ohio Turnpike Commissioner, defends decision on pavements.

To support this claim, Shafer is basing his case mainly on two points:

• Kauer had prior affiliations with the American Concrete Pipe Association and Wire Reinforcement Institute.

• Competitive bids taken on asphalt and concrete for the New Jersey Turnpike were favorable to bituminous paving, hence the Greiner Co. recommendation that concrete be adopted as less costly is open to challenge as not being in the public interest.

Kauer, first person to testify, contended that the decision to exclude asphalt was made purely upon the merits of the materials.

• **The evidence**—The basic document in the hearings is a report submitted by the Greiner Co. Aug. 4, 1951 to Kauer. It includes the engineering analysis on comparative types of pavement for the turnpike, and recommends a 10-in. reinforced concrete pavement on a 6-in. granular sub-base.

The analysis recommends pavement design be controlled by a gross axle load of 36,000 lb to provide sufficient allowance for impact to cover safely the expected loads. Several designs of flexible and rigid pavements were made and studied for servicability and economy. Of these, two were presented for comparison.

The comparisons showed that construction costs for flexible pavement would total $55.7 million as compared with $53 million for rigid pavement.

The comparisons also showed that estimated expenditures for maintenance over a 35-year period would reach $14.2 million with flexible pavement, as compared with $12 million for rigid pavement.

Wineman LeSeur, civil engineer with the Greiner Co., was required to produce in evidence a report dated June 11, 1951, wherein a design for construction of both asphalt and concrete of a total thickness, including sub-base, of 30 in. was recommended. Shafer attorneys undertook to show that less than two months later, after conferences with Kauer and his staff, the design was changed.

Shafer then produced alternate plans for roadway design which he said would show that the use of asphaltic concrete would cost less than Portland cement concrete. He further contends that even according to present plans, under competitive bidding, the asphalt firms would be able to underbid concrete paving companies.

$3.4-billion road plan offered in California

Wraps were taken off a $3.4-billion, 15-year highway construction program for California last week.

After an intensive study, the Automotive Safety Foundation reported to a joint Senate-Assembly fact-finding committee that:

- $1.8 billion was needed to meet the critical needs of the state's highway system.
- An additional $1.6 billion would be required to build the system to a point where it will be adequate to meet traffic demands which will exist in 15 years.

Recommended financing for the first phase of the program includes a $500-million bond issue to be paid off by a 1-cent increase in the gasoline tax (now 4½ cents a gallon); an increase of 2½ cents in the diesel fuel tax (now 4½ cents a gallon); an increase from $6 to $8 in vehicle registration fees; and other tax and fee increases.

Indiana toll road clears another hurdle

Early construction of a $165-million toll road across northern Indiana seemed virtually assured last week as the Indiana Supreme Court upheld the constitutionality of a 1951 law creating the Indiana Toll Road Commission.

The favorable decision on the case, which has been in the courts for nearly a year, now gives the go-ahead signal on toll road work, according to James D. Adams, chairman of the commission.

Spanning Indiana, the proposed highway will extend east from Chicago, and connect with the Ohio Turnpike when completed.

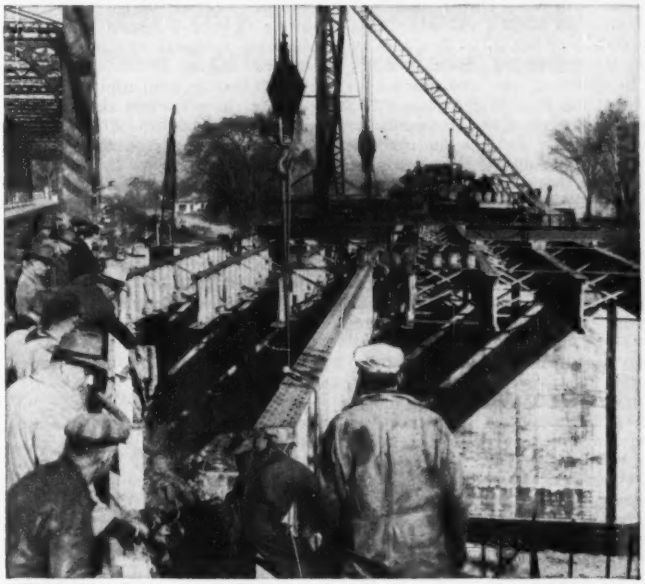
Adams said engineers will now be employed to determine economic feasibility of the project. He estimates construction of 150-mi of expressway can be carried to completion in two years.

The route is expected to parallel approximately U.S. Route 20. The Chicago approach will be via Doty Ave., the Calumet Expressway, and the Tri-State Expressway now already completed to Indianapolis Blvd. in Hammond.

This expressway will be extended east to Broadway in Gary, where the first toll gate to serve the road probably will be located.

Swinging across the state, the route will pass south of Michigan City, South Bend, and Elkhart toward the Detroit, Toledo, Cleveland area. A spur from the turnpike south to Fort Wayne is planned for some future date.

RAILROAD TRAFFIC has started moving over this section of a C&O spur . . .



VEHICLES will soon start rolling across this bridge over the Scioto River.

Transportation to A-plant pushed

Construction of rail and highway transportation lines to the site of the new $1.2 billion atomic energy plant near Portsmouth, Ohio, is moving ahead fast.

Last week the Chesapeake and Ohio Railway announced completion of a 4.1-mile spur track in a record 40 working days. Freight was moving over the line even while final work was being done.

The spur, including two trestles both 43 ft high, leaves the C&O main line at Robbins, Ohio. It was completed at a cost of $1.2 million.

Highway reconstruction along north-south U.S. Route 23 between Portsmouth and Chillicothe is being speeded to meet heavy traffic demands. Nearing completion is a $1.5-million bridge to carry four lanes of traffic over the Scioto River at Chillicothe. Two of the four lanes are expected to be open by the first of next year.

Navy builds nerve center

The U. S. Navy is building a $15-million communications system of three units in southeastern Virginia, which will be able to receive and transmit fleet communications around the globe.

The system consists of an "ear" under construction on a 5,000-acre tract in the Great Dismal Swamp near the village of Northwest, Va., a "mouth" located about 15 mi west of Portsmouth, and a "brain" inside the Norfolk Naval Base.

Need for the big construction job arises from a number of factors. One of these is that the Commander-in-Chief of a fleet no longer maintains his headquarters aboard ship, but instead directs his men-of-war from an office building ashore.

The Commander-in-Chief of the Atlantic Fleet has his headquarters at Norfolk, which is also headquarters for the Fifth Naval District, and headquarters of SACLANT (the Naval equivalent of NATO). This adds up to a tremendous log of radio messages.

In addition, the complexities of modern war have loaded ships at sea with extra gear. Radar equipment at the top of the ship plus the need for a greater amount of clear space for anti-aircraft fire, have restricted the expansion of antennae to a point where radio transmission is being impaired.

The new project is designed to solve these problems.

• **How it will work**—The "brain" will be a new communications center situated inside the Norfolk Naval Base. For this center, plans have been drawn for a windowless, air-conditioned, splinter-proof building through which all messages, both incoming and outgoing, will pass. The building will measure 200 ft by 70 ft, with antennae on top. Ordinarily this building will use electric power from the usual Naval base sources, but it will be equipped with emergency diesel-powered generators.

Twenty-seven miles south in the Great Dismal Swamp on the Virginia-North Carolina line will be the receiving unit, or the "ear." In the "ear" Naval engineers recognized their greatest construction problem because of interference with incoming signals.

At the center of the receiving facility will be a concrete, windowless, splinter-proof building similar to the one to be built for the "brain."

Then surrounding this building, roughly in a circle, will be built doublet antennae. These will receive messages on the high frequency band, and will vary as to type depending on the job to be done.

Beyond the doublet antennae in another circle will be situated terminated rhombic antennae of several sizes. These antennae, each built in a diamond shape and mounted on poles 90 ft high with the poles in some instances several hundred feet apart, will ring the doublet antennae. This serves to intensify the incoming signals from distant points.

The circle from the "ear" building to the outer edge of the rhombics will have a radius of 2,400 ft. Beyond this will be a circular area 600 ft wide and approximately 20,000 ft in circumference which will be stripped of all houses and all trees and in which the engineers guarantee there will be no man-made electrical interference.

Outside the 3,200-ft radius area will be erected a building for housing personnel.

The antennae will be constructed for directional reception. The Navy expects to receive signals at Northwest from anywhere on earth and in order to facilitate this will build the "ear" so that operators can skip from one antenna to another almost automatically in order to build up a maximum volume on a weak signal.

• **Sending unit**—The "mouth," or sending facility west of Portsmouth, does not present as great problems as the "ear" because the station can control the power of the signal.

Instead of 5,000 acres, the "mouth" will have an antennae field of only 800 acres, although the presence of cleared farm land immediately outside the reservation will serve to cut down interference by trees.

In the center of the "mouth" will be a third concrete, splinter-proof building, this one in the shape of a cross, and around this will be arranged antennae for sending on all wave bands. Principal feature of the "mouth" will be an 800-ft transmission tower.

The "brain" will be connected with the "ear" and the "mouth" by cable and by microwave relay. In the event of the crippling of one of the units by war, the facility could be linked with the Washington radio "ear" at Cheltenham, Md., and the "mouth" five miles from Annapolis, Md.

• **Big construction**—Site preparation and building near Portsmouth will cost $2.8 million and at Northwest almost as much. This does not include the cost of antennae and, of course, none of the transmitting or receiving apparatus.

The Navy expects most of the building contracting to be done by local contractors. The Naval shipyard at Portsmouth, where the electronics engineering headquarters for the Fifth Naval District is located, will aid in the work.

In building concrete, windowless buildings, the Navy is taking cognizance of the possibility of aerial attack.

The Navy estimates that 18 months, or more, will be required to complete the job at all three units.

N. J. turnpike acts to cut fog accidents

Use of large illuminated signs calling for reduced speeds on the New Jersey Turnpike when fog or other abnormal conditions make that necessary was approved by the turnpike authority Nov. 18. This action was the outcome of a number of accidents a few days earlier when fog blanketed much of northern New Jersey and was particularly bad in the "meadows" region through which the turnpike runs. For several hours of one night the turnpike was closed to traffic as a result of the accidents.

Other steps to be taken immediately are painting a 6-in. wide white line along the inside edge of the shoulders adjoining the median zone, using a reflectorized paint, and increasing the police force to 62 men. This latter step has been under consideration for some time now (ENR Nov. 13, p. 40).

At the present time, to warn motorists of the need for reduced speed, the turnpike authority uses signs calling for a 35-mph speed limit, which can be hooked over the 60-mph speed signs on the shoulders. They have white backgrounds with "35 MPH" in large letters of red reflectorized paint. When not in use, these plates are hooked on the back of the regular signs. Police make the changes as needed.

These signs have been criticized as not being very visible in a dense fog.

The new signs along the northern end of the turnpike are to be larger and will be placed in a horizontal position above the roadway on the girders of overhead structures or will be set in a vertical position along the side of the pavement.

In addition to 18-in. high letters indicating the restricted speed, the signs also will have smaller illuminated letters advising drivers of the reason for speed restrictions, such as fog, construction ahead, or an accident. These signs will not be legible unless lit.

Initially, the lights of these signs will be turned on or off manually by police, but ultimately they are to be centrally controlled as well.

Taft maps labor law changes

Two men who will have most to say about how the Taft-Hartley labor law is amended next year got together in New York last week. If there is any major difference of opinion between President-elect Eisenhower and Senator Taft, it wasn't evident. To the contrary, Eisenhower probably is pretty much in agreement with Taft's plan to:

- Correct some of the unfair sections of Taft-Harley.
- Close some loopholes.
- Take no drastic "anti-labor" steps like preventing industry-wide bargaining or trying to curb so-called "labor monopolies."

Perhaps most significant is Taft's decision not to tamper with the Taft-Hartley provision for handling national emergency strikes. One of his 28 amendments, which passed the Senate in 1949 would have given the President the alternative of seizing a strike-threatened plant instead of getting an 80-day injunction. But that was because President Truman objected so strongly to the injunction.

Taft thinks that the 80-day injunction should be given a fair chance to prove its worth under a President who is not prejudiced against it. Eisenhower hasn't said how he would handle national emergency disputes except to say he sees no difference between injunction and seizure.

Taft is also abandoning his 1949 amendment which would have deleted the ban on feather-bedding. That is because that section of Taft-Hartley is now being tested in the Supreme Court in two cases growing out of the "bogus type" and "stand-by" demands of the printers and musicians unions. These problems might be handled later in separate legislation.

These are some of the Taft-Hartley changes Taft has in mind:

- **NLRB**—Enlarge it from five to seven members. (This gives Eisenhower two appointments, one of whom he could make chairman.) Make it bipartisan. (This would open up one or two more appointments, giving Eisenhower's choices a majority.) Make the general counsel more independent of the board members. Taft proposed these changes in 1949 and in a re-organization bill in 1950. Chairman Paul M. Herzog probably would resign if he could not stay as chairman. This would facilitate the turnover of Democratic appointees.
- **Non-Communist affidavits**—Extend to employers as well as union leaders. Eisenhower goes along on this.
- **Secondary boycotts**—Tighten the curb so that it will apply to union pressure brought on secondary employers as well as on their employees; relax so that it will permit employees to refuse to do work that has been shifted from a struck plant, and eliminate the rule that NLRB must seek an immediate injunction in every secondary boycott situation.
- **Economic strikers**—Remove the prohibition against voting by economic strikers who have been replaced. Eisenhower cited this as a possible union-busting weapon. Taft says the fear is "imaginary," but still thinks this change desirable.
- **Welfare funds**—Put employee welfare funds to which employers contribute under supervision of the Department of Labor.

There are some Republicans and Southern Democrats in Congress who want to make Taft-Hartley tougher and, particularly, to ban industry-wide bargaining. But Taft isn't listening to them. He recognizes that Republican control of both sides of the Capitol will be very narrow.

He doesn't want to lose in 1955.

Contractors pay $7.8 million yearly to 27 New York City welfare funds

A comprehensive survey of welfare funds in the building trades in New York City, revealing for the first time the huge annual dollar volume of employer contributions and benefits paid, has been completed by the Building Trades Employers' Association, an organization of 1,000 general and specialty contractors.

The new report details the growth, increase in benefits, expenditures and financial status of 27 funds as of Jan. 1, 1952.

It shows an increase of seven new funds established in the years 1950-52, with a total of 71,865 building craftsmen covered, an increase of 27,468 over the total of 44,397 in 1950.

No information was available on the steamfitters fund, and the information received on the electrical workers fund was incomplete. These two funds would add at least 8,000 more building craftsmen to the total eligible for welfare benefits in New York City.

The survey shows annual employer contributions of about $7.8 million. This total does not include the contributions made by the employers of the steamfitters or the electrical workers. Yearly expenditures for benefits amounted to $5.4 million, and the 27 funds had accumulated reserves of about $12.3 million as of Jan. 1, 1952.

FRED J. DRISCOLL, chairman of survey committee and president of BTEA.

- **Operating the funds**—All of the funds are financed by employer contributions, largely by contractor-members of the BTEA. Most of the contributions amount to 3% of payroll, but a few funds receive 4%. All of the funds are administered by a joint board of trustees composed of union and employer representatives.

All of the funds provide life insurance, ranging from $500 to $3,000, with $1,000 to $1,500 the most common amount.

Most of the funds provide accidental death and dismemberment insurance, ranging from $500 to $2,000.

Other major insurance features include: accident and sickness; hospitalization; and surgical and medical. Twenty of the funds cover hospitalization for dependents in addition to the employees themselves. Twelve funds also provide surgical insurance for dependents.

Closed shop upheld in unusual case

The Ninth Circuit Court of Appeals in San Francisco has come up with a peculiar decision—a closed-shop contract made before enactment of the Taft-Hartley Law (which banned closed-shop agreements after 1948) is still valid where it has continued in effect from year to year by its own terms without affirmative action of the parties.

What makes the case rare, of course, is the finding of a legal closed shop. But probably there is not another contract in the country in a similar situation.

Even if there are others, it is not likely that other courts would take the same view.

For certainly the intent of the Taft-Hartley Law was to ban closed-shop agreements. And since 1948, it has been a rule of law that closed-shop contracts entered into or renewed by the parties after the one year's grace granted in the Taft-Hartley saving clause, are illegal.

• **Case**—The California ruling came in denying enforcement of an order by the National Labor Relations Board. The board had directed the AFL asbestos workers to stop enforcing a closed-shop contract made in 1943 between the Seattle Building and Construction Trades Council and various construction employers.

The Taft-Hartley saving clause allowed closed-shop contracts, made before passage of the law, to expire at the time specified in the contracts. It also permitted closed-shop contracts which were made between time of passage and the time when the law became effective, but only if they were for a term of one year. Neither type could be renewed or extended after Aug. 22, 1947.

The Seattle Building Trades contract provided that its terms "shall continue in effect thereafter (1943) from year to year unless changed by mutual agreement of the parties."

• **Ruling**—The labor board ruled this was a closed shop as banned by Taft-Hartley, since it was automatically renewed after 1947.

But California judges Healy, Bone and Pope thought differently. They said the contract continued in effect by its own terms and was not renewed within the meaning of the saving clause.

Spokesmen for the Association of General Contractors said they could have gotten excited about the decision if it had come three years ago. Many pre-Taft-Hartley contracts then were still alive.

And the labor board isn't excited either. The law of the land does not follow the California rule, and the board can apply its original ruling in the asbestos case again, even in California.

So probably nothing much will come of the decision by the three California judges; it is just a legal novelty.

NLRB dismisses charges against 50 contractors

In San Francisco a National Labor Relations Board trial examiner has recommended dismissal of unfair labor practice charges against four construction employer associations and more than 50 contractors. The charges grew out of a plumbers' strike last summer, which resulted in a shutdown of certain construction jobs.

The employers were charged by the building trades councils of San Mateo, Santa Clara and San Benito Counties with conducting a lockout between Aug. 2 and Aug. 13, throwing the employees out of work and discouraging union activity.

Trial Examiner Martin Bennett found that the strike, by AFL Plumbers Locals 393 and 467, made it necessary for some of the general contractors to shut down construction work, which could not proceed economically with the plumbers idle. The issues involving the other general contractors were somewhat more complex and related to illegal plumbing subcontracts on the jobs.

Included in the complaint were: the Central California Chapter of the Associated General Contractors of America, Inc.; the Associated Home Builders of San Francisco; the Northern California Chapter of the Associated General Contractors of America, Inc.; and the Peninsula General Contractors and Builders Assn.; and their employer members. Also named as defendant was the Northern California Plumbing and Heating Conference.

Escalator going up

New contracts in southern California's aircraft industry, between Douglas Aircraft and International Association of Machinists locals, contain something new in the way of escalator clauses.

The escalator (a one-cent adjustment for each 1.14 change on the cost-of-living index) now extends wage maximums permanently upwards each time it exceeds an old maximum. It works like this: Say a man was receiving $2.38 an hour, the maximum for his classification; a quarterly cost-of-living adjustment moves him up to $2.39. The next adjustment is downwards two cents. His rate will drop to $2.37, but the maximum for the classification will stay at $2.39, which he can reach regardless of what happens to the index.

Assisting workers to reach the new maximums will be automatic progression within labor grades, providing 5¢-an-hour increases each 16 weeks until the maximum is reached.

Suit against union lost by builders

Three Kalispell, Mont., builders lost a fight to force the local Building Trades Council to pay $11,000 damages for putting them on an "unfair list."

The suit was brought by Ed Pagel, Glenn Mann and Dale Collins, builders in Kalispell, because union plasterers declined to plaster a house built by non-union labor. The builders argued that they were deprived of the services of union plasterers because they had been placed on the "unfair" list issued by the Kalispell Building and Construction Trades Council.

Judge W. D. Murray, sitting as a United States Judge in Missoula, Mont., dismissed the suit two weeks ago, telling the builders' attorneys that their case was "flimsy."

The builders' attorneys had tried to bring the case under Taft-Hartley by pointing out that the furnaces in the houses were part of interstate commerce and hence Taft-Hartley applied.

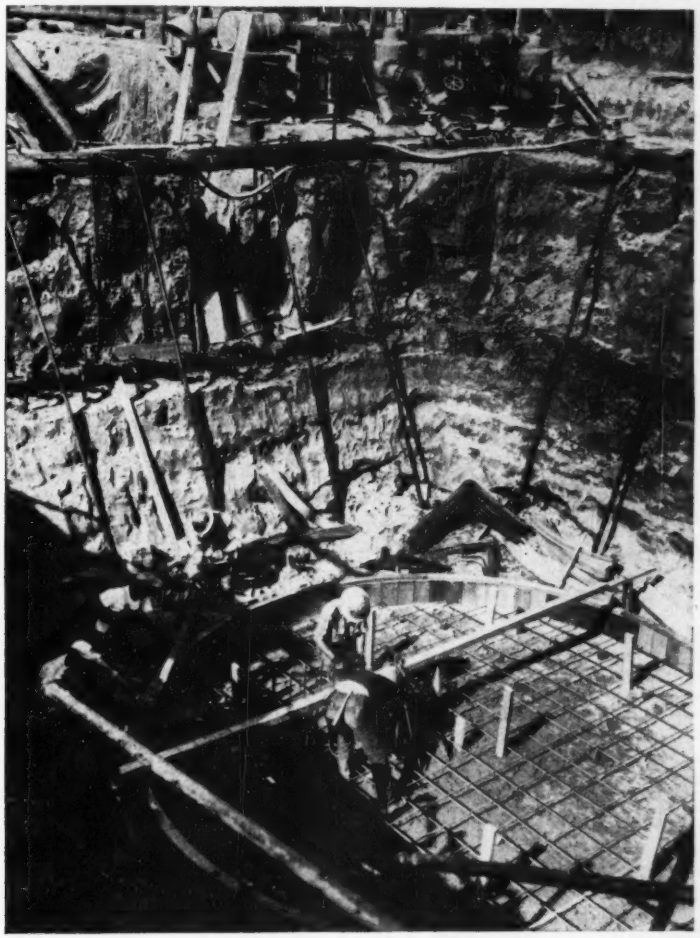
Jurisdictional dispute settled at GE project

After a one-day strike by 400 carpenters and millwrights, work was resumed on construction of the General Electric's Buechel, Ky., plant, last week (ENR Nov. 21, p. 32).

The 2,500 construction workers employed on the project site walked out after the carpenters and millwrights and the ironworkers got into a dispute over the installation of conveyor equipment.

Announcement of a satisfactory agreement was made by Pat H. Reardon, secretary of the Louisville Building and Construction Trades Council.

GROUND WATER COMPLETELY INTERCEPTED IN HIGHLY STRATIFIED AND UNSTABLE MATERIAL



Stang dewaters 19 feet down . . .

Contractor Donald M. Drake of Portland, Ore., had to go down 19 feet below ground water level through highly stratified and unstable material on this sewage disposal system for the City of Longview, Wash. The high water table—only two feet below natural grade—created serious problems in the excavation.

The new Tacoma office of the John W. Stang Corp., solved the problem economically with a flexible Stang dewatering system that effectively penetrated the various strata so that ground water was completely intercepted.

Any one of the John W. Stang offices can do the same for you. Why not call them the next time you have a dewatering problem?

●

At the site of the sewage station, men work nineteen feet below ground water level. Note men are not wearing rubbers or boots.

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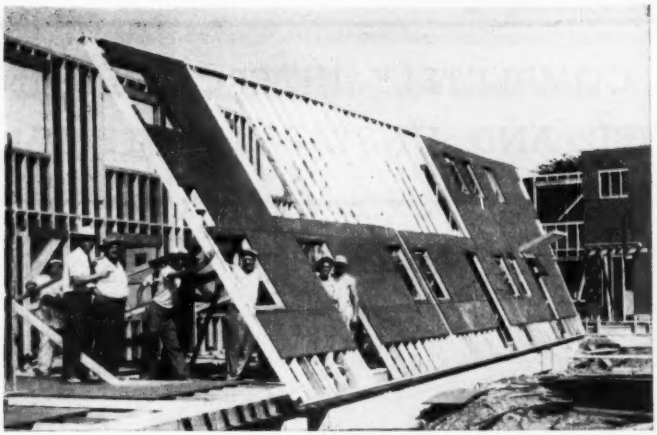
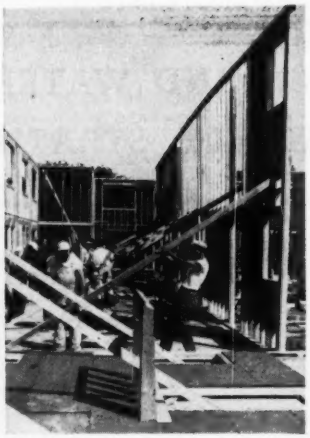


TWO-STORY WALL SECTION, framed and sheathed on sub-flooring, is swung into place by men stationed 4 ft apart. Tilt-up construction saved 15 cents per sq ft of wall.



WALLS ARE BRACED, then framing proceeds in normal manner.

Tilt-up wood frame walls cut labor costs

THE TIME-HONORED ART of wood-frame construction underwent a significant modification on two multiple-dwelling housing projects now under construction in Buffalo, N. Y. The carpentry subcontractor erected 350,000 sq ft of two-story balloon-framed wall by tilt-up, much as is done with prefabricated concrete panels.

According to this firm, Sofarell Bros. Building Co., Jamaica, N. Y., savings over conventional erection methods amounted to about 15 cents per sq ft of wall—all of it realized in reduced labor costs.

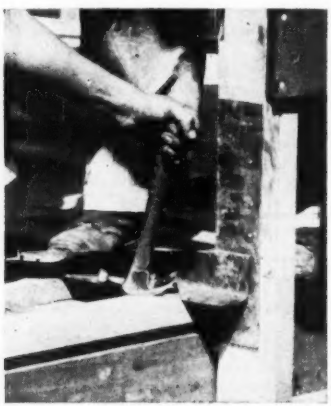
The two projects, owned by the Buffalo Municipal Housing Authority, are the $2.1-million Ferry-Grider Housing Project and the $1.8-million Lawn Avenue Housing Project. Both are about 75% complete.

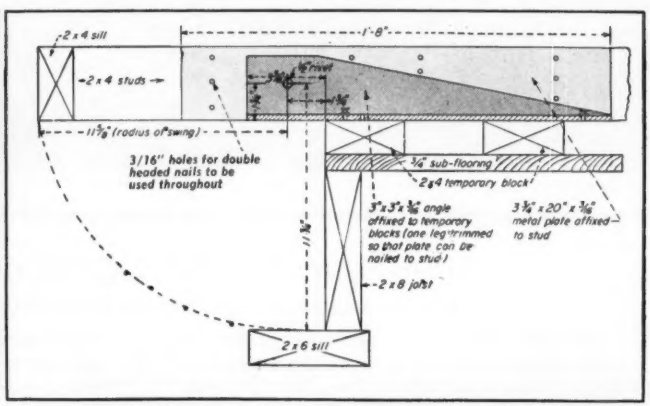
• **Projects described**—The first named contains 210 dwelling units of from three to six rooms, 150 of the apartments of four rooms. Foundations are 8 and 12-in. concrete block walls on spread footings; floors consist of 1x6 flooring on 2x8 joists; hipped roofs are a combination of various size rafters up to 2x10, covered with ½ in. plywood roofing and asphalt strip shingles. The walls are balloon framed, with studs 17 ft 2 in. long. Exterior sheathing is ½-in. fiber wallboard applied in 2x8-ft sheets. Brick veneer and steel sash are employed. Total wall area is 195,000 sq ft, floor area 185,000 sq ft.

There are 212 apartments in the Lawn Avenue project, each containing from three to seven rooms. Four-room units number 88, five-rooms 86. Ten-inch reinforced concrete foundation walls were utilized. Plywood sub-flooring, ⅝ in. thick, is supported on 2x8 joists and 6x10 built-up wood girders.

Prefabricated wood roof trusses, assembled in 18-ft long sections on a special runway, are covered with tongue and groove sheathing and asphalt strip shingles. First-floor exterior walls are 1⅛-in. sandwiches of asbestos cement and cane-fiber insulation. Second-floor walls are ½-in. fiber wallboard and asbestos shingles. Double-hung wood sash and frames are used. Total wall area is 160,000 sq ft; total floor area is 191,500 sq ft.

Incidentally, by preassembling sections of roof trusses and setting them by crane instead of placing individually from scaffolding, setting costs were reduced by 40%.




2 x 4 sill
1'-8"
2 x 4 studs
11⅝" (radius of swing)
3/16" holes for double headed nails to be used throughout
⅝" sub-flooring
2 x 4 temporary block
3" x 3" x ¾" angle affixed to temporary blocks (one leg trimmed so that plate can be nailed to stud)
3⅜" x 20" x ⅜" metal plate affixed to stud
2 x 8 joist
2 x 6 sill

METAL HINGE is key to tilt-up method. Hinges are spaced on 6-ft centers, utilize double-headed nails as indicated in detail.

• **Use layout rods**—It will be sufficient to describe wall framing and erection for the Ferry-Grider project only, since the two jobs are quite similar. After a 2x6 sill was bolted down, so-called "joist layout rods" were employed to eliminate completely the marking of these members. The rods were tacked to joist tops, and joist bottoms were then toenailed in place. Two rods for each type apartment were all that were necessary. Thus, the rods for the four-room units were used 150 times.

When the joists were secured, subflooring was nailed on and shoes and plates fitted. Wall layout rods transferred exact window and door openings to the plates and shoes.

Now came studs, headers, sills. They were assembled on the sub-flooring in sections up to 120 ft long. Exterior ¾-in. wallboard was applied and door canopies framed in while the wall section was in a horizontal position.

• **Special hinge**—Key to tilting up the wall sections was a special metal hinge developed by Patrick Sofarelli, partner in the carpentry firm. It was affixed to studs and joists, as indicated in the accompanying photo and diagram, on roughly 6-ft centers.

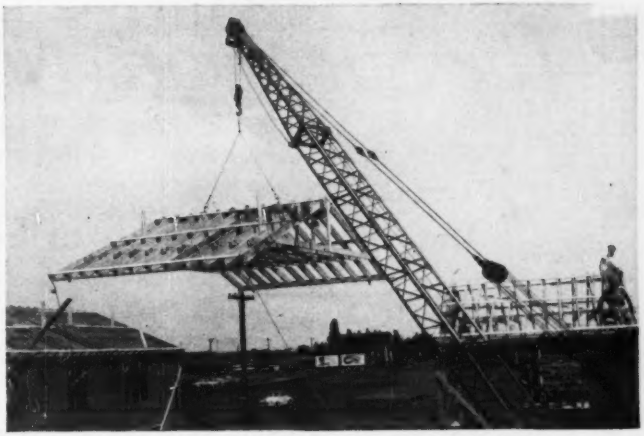
The two-story wall sections were raised manually, the men being stationed 4 ft apart. Counter balances aided in the lifting operation. The hinges were positioned so stud bottoms would just clear the sill. After the upright wall was braced from the inside, the hinges were removed and the section dropped gently onto the sill.

The opposite wall section was assembled right where its mate had been tilted up from. Just before this one was raised, the inside braces on the first were replaced by outside braces, so as not to interfere with the tilt-up.

• **Costs**—The contractor's cost analysis for Ferry-Grider shows that tilt-up construction saved 5 cents per board-foot on labor for exterior framing and 6 cents per sq ft on exterior wall sheathing. Altogether, dollar savings was $29,300, or 15 cents per sq ft of woll.

Lawn Avenue cost reductions differ slightly because easier-to-handle ½-in. sheathing was estimated lower than the ¾-in. sheathing used for Ferry-Grider. The 5 cents per bd ft figure for framing labor was the same, but only 3 cents per sq ft was saved on sheathing which was applied only in the second floor. The asbestos-cement sandwich and shingles were applied when the wall was up. Total savings amounted to $21,800, or 13½ cents per sq ft of wall.

In charge of both jobs for Sofarell was Patrick M. Sofarelli. Richard E. Livingston, president of the Buffalo District Council of Carpenters, was instrumental in clearing the way for use of tilt-up construction. James Wm. Kideney & Assoc. was architect for Ferry-Grider; Joseph Fronczak and John DeForest of Buffalo were architects for Lawn Avenue. General contractor for both projects is F. D. Rich Co., New York City. Beman & Candee are mechanical engineers for both jobs.



PREFABRICATED ROOF TRUSSES lowered setting costs by 40%.

CARPENTRY UNIT PRICES

FERRY-GRIDER HOUSING PROJECT, BUFFALO, N. Y.

Class of work	Quantities (total)	Unit prices Mat'l	Labor	Total
2" dim. framing (bf)	691,000[1]	$0.12	$0.17	$0.29
2" dim. partition & blocking (bf)	192,500	....	....	0.226
¾" exterior wall sheathing (sf)	200,000[2]	0.09	0.13	0.22
Roof sheathing (sf)	225,000	....	....	0.24
Rough floor sheathing (sf)	220,000	....	....	0.22
Exterior siding (sf)	13,000	....	....	0.40
Exterior cornice (ea)	215			20.00
Exterior door frames (ea)	226			10.00
Interior grounds (ea)	215			20.00
Steel bucks (ea)	1,130			5.00
Wood stairs (ea)	210			40.00
Kitchen cabinets (ea)	210			30.00
Interior trim & doors (ea)	210		$80—110.00	

[1] Savings by tilt-up method $0.025 per bf average. (Tilt-up applied to only half of this framing or 345,500 bf @ $0.05.)

[2] Savings by tilt-up method $0.06 per sf.

LAWN AVENUE HOUSING PROJECT, BUFFALO, N. Y.

(Carpentry contractor furnishes lumber, hardware and labor, but not millwork or cabinets.)

Class of work	Quantities per building Minimum	Maximum	33 bldgs	Unit prices Mat'l	Labor	Total
2" dim. framing (bf)	13,700	48,000	770,300	$0.12	$0.13[1]	$0.25
1" sub-flr. & roof sh. (bf)	5,500	22,100	361,800	0.10	0.12	0.22
½" exterior sheathing (sf)	1,750	5,500	85,750	0.05	0.09[2]	0.14
Interior partitions (bf)	3,400	10,500	182,980	0.12	0.18	0.30
Exterior asbestos shingles (sf)	1,750	5,500	85,750	0.10	0.10	0.20
1⅛" exter. thermal bd. (sf)	1,450	4,800	74,700	0.27	0.29	0.56
Exterior cornice (lf)	200	700	11,080	...	0.50	0.50
Ground for trim (lf)	2,400	9,200	153,360	0.05	0.05	0.10

[1] Savings by tilt-up method $0.025 per bf.

[2] Savings by tilt-up method $0.015 per sf of wall ($0.03 per sf of sheathing).

The Surveyor's Notebook

Reporting on Unusual Surveying Problems and Their Solutions

Notekeeper: W. & L. E. Gurley, America's Oldest Engineering Instrument Maker

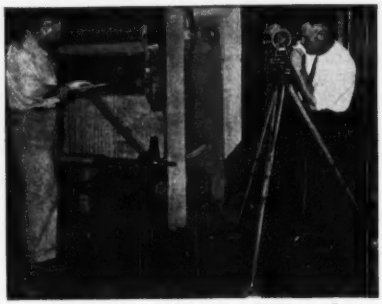
The IN'S and OUT'S of Surveying

"There's a lot of work for the surveyor *out* of the field, as well as *in*," says Gerald Hyde, Consulting Forester and Land Surveyor of Nashua, N. H. "Industry is learning that a surveyor can be a mighty valuable man to bring in on tough aligning jobs inside a plant.

"My main job is retracing old timber lines. But, often, I'm called in by one of the paper mills for an inside job.

"One company was experiencing trouble in processing work; and engaged me to correct alignment of the drying rolls on its paper converting machine. A line parallel to the center was established; and from that—by turning 90-degree angles and reading a machinist's rule—the trouble was soon found. The final roll was 3/16" out of parallel. This was easily corrected, saving disassembly.

"Now that the company has found that a man with a transit is indispensable in solving many problems, I am called in to determine center lines prior to machine assembly. This is done with the transit, by getting points on beams and floor.

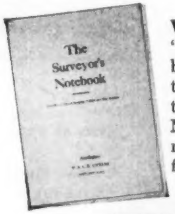


Gerald Hyde (right) of Nashua, N. H., reads machinist's rule in aligning roll on paper converting machine. Blocks, connected to each other by chain, keep tripod legs from slipping on hard floor.

A consulting forester and land surveyor, Hyde uses a Gurley level, still in fine condition after 60 years' use. He also owns an 1857 Gurley transit.

"Here's a good trick for keeping the tripod from slipping. Three blocks of wood, with holes in them to accommodate the points of the tripod legs, are connected with light chains which will stretch out and become taut when the tripod is set up. I carry the blocks and chain in my case. The rig is excellent also for use on the pavement or when the tripod is used on any hard surface.

"Of course, the instrument on the tripod is a Gurley. Everyone in this neck of the woods swears by Gurley instruments, for they can really take it. I have a level which has been in use for more than 60 years. It's still in fine working condition."



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What's your story? We would like to feature it in a future page in this series. Drop us a line, outlining your idea. We'll contact you later for full details.

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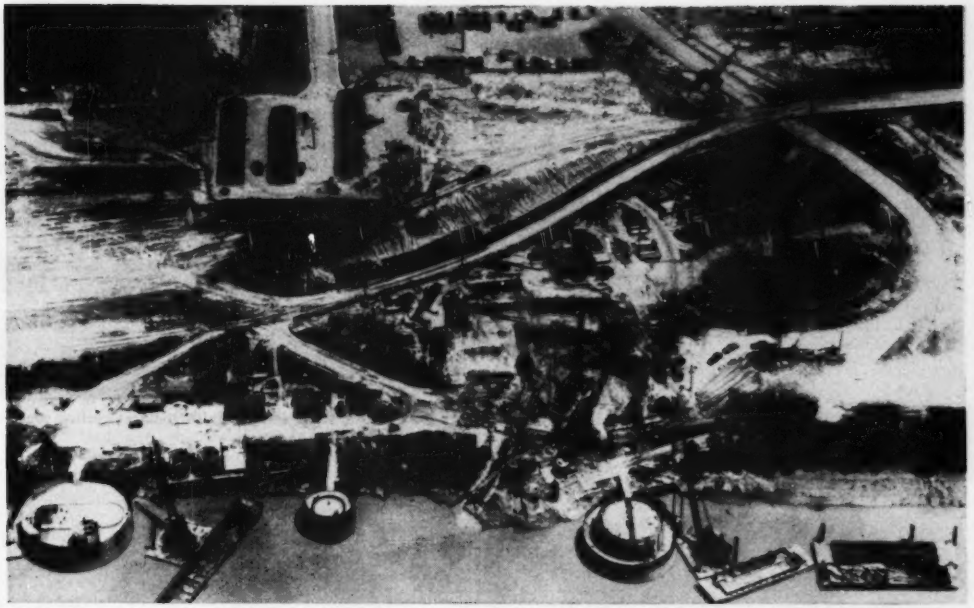


SAND ISLANDS made with sheetpile cells establish a fine medium for sinking concrete caissons on Ohio River. Cells are removed when caissons are seated on rock and tremie-sealed.

Caissons support riverfront power plant

C. E. Burtch
Field Engineer—Contracting Division
Dravo Corp.
Pittsburgh, Pa.

NEED FOR MINIMUM INTERFERENCE with adjacent construction on the river bank made floating equipment the logical choice for river foundation work at Cincinnati Gas and Electric Company's new Walter C. Beckjord Station. The river work, handled by The Dravo Corp., included water intakes and coal handling foundation facilities.

The project, located at Mile 453 on the Ohio River, 20 miles upstream from Cincinnati, includes two 100,000-kw generating units and a 125,000-kw unit.

The first 100,000-kw generating unit now is producing power on the line and work is well advanced on the second and third units.

Building lines of the new plant are partially riverward of the normal low-water line. Sheetpile, caisson, and concrete construction were adopted in this zone. Due to the construction schedule, adjacent land operations had to progress simultaneously with the river work. Moreover, each had to carry on with minimum interference from the other, so floating plant provided the best approach to Dravo's part of the job.

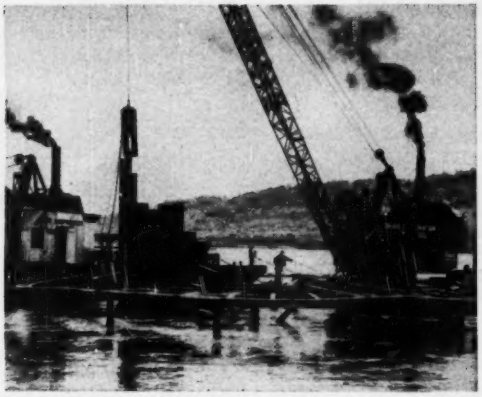
Caisson work consisted of four hollow concrete caissons with walls from 2½ ft to 4 ft thick and varying from 30 ft to 60 ft in diameter. These caissons were sunk to bed rock at El. 402, with natural river bottom at El. 445, and were located 100 ft riverward of low-water stage.

The largest was a 30-ft x 80-ft oblong caisson with rounded ends. This serves as the foundation for the coal unloading pier and supports a 207-ton overhead crane used to unload the heavy machinery coming into the plant in the construction stages. With no rail connections, the plant receives all supplies by barge.

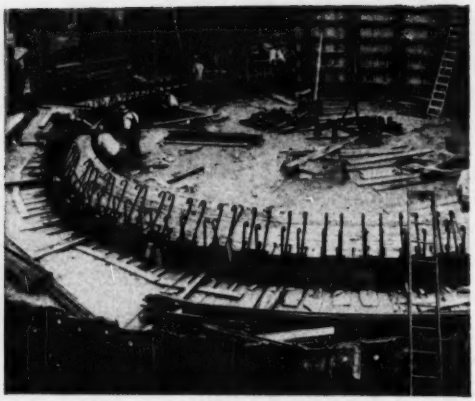
The second two caissons were 56-ft diameter intakes, or "crib houses," each of which provides facilities for two units of the plant. The crib houses supply raw water for the circulating, service and treated-water pumps; strain, purify and filter the service water; and return warm water from the condensers to the intake to prevent ice from forming. A 30-ton overhead crane is installed for service and maintenance work on the traveling bar and mesh screens as well as other equipment. The last of the caissons was a 30-ft dia conveyor-support pier with 3-ft thick walls used as an intermediate support for the conveyor from the coal unloader directly to the bunkers of the plant.

• **Sand islands used**—Because of the unpredictable stage of the Ohio River until after the normal June rise and following the September rise, the "sand island" type of caisson construction was used. This plan calls for driving a steel sheetpile cell larger than the final outside dimensions of the caisson, backfilling this cell to desired grade with sand, and proceeding to build the caisson on this newly created "island." Then, as sand is excavated from inside the concrete caisson shell, the structure slowly sinks under its own weight.

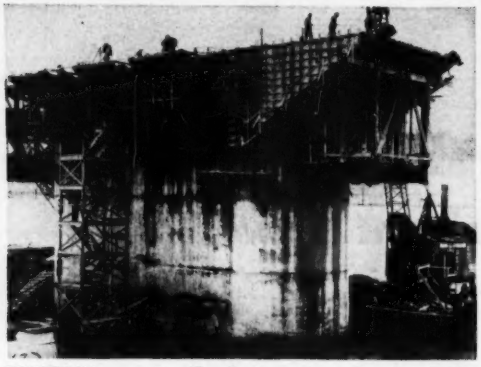
The natural river bottom in the area of the proposed caisson was dredged to remove any logs or other obstructions to sinking the caisson. A templet was then built, to position sheetpiles that were 45 ft to 50 ft in length. These were set and driven to within 20 ft of rock, leaving the tops of the sheets high enough to backfill and grade off to provide a stable working surface 20 ft above low water. With the top of the sand island at El. 469, and rock at El. 402, there remained 67 ft through which the

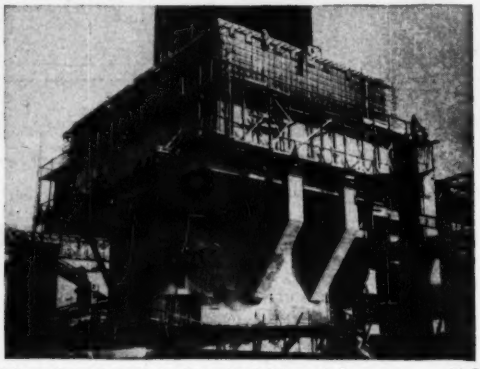


WOODEN TEMPLET guides sheetpiles in first step of sand-island construction.



STEEL SHOE, set at island's finish grade, is cutting edge for crib house caisson.





BRACKETS support widened-out portions of coal unloader, (left) and intake crib (right). Steel falsework beams are needled through caisson walls to support forms; they will be burned off later.

caissons were sunk to final position.

• **Caisson construction**—The sand islands varied from 45-ft dia for the small conveyor-support pier, to 90-ft dia for the large coal unloader pier. A welded steel cutting edge or "shoe," at the bottom edge of the caisson, was positioned on wood blocking to distribute the load over the sand fill. Then the forms for the first lift were placed. The form was concreted, stripped, cured and the caisson readied for the first sinking.

The shoe blocking was systematically chopped around the perimeter of the cutting edge until the caisson "broke through." Two derrick boats dug the sand fill from inside the hollow caisson and it began its slow descent through 67 ft of sand. Altogether, it required four 15½-ft lifts of concrete and subsequent sinkings to land each caisson on rock, thus leaving the top of concrete above water level. The rock inside the circular cutting edge of the caisson was cleaned off with jets and an air lift. Inspection was made by a diver before a tremie concrete plug varying from 6 ft to 10 ft 6 in. thick was poured. The sand island process was completed with removal of the sheetpile encircling cell.

• **Bracket construction**—With the caissons completed to El. 462, the job of finishing the structures to El. 520 presented an unusual problem. The 56-ft dia crib house flared out at the top to 80 ft long by 56 ft 6 in. wide, 20 ft above pool.

The transition in shape from circular to rectangular was accomplished by construction of reinforced concrete support brackets, two upstream and two downstream. To span the width of the crib house, 36-in. WF beams were embedded in the tops of the brackets as the latter were poured. Two beams of the same size were placed on the projecting ends of the cross beams to span the length of the structure. This arrangement of beams provided the main support for the cantilevered forms to construct the crib house. The temporary WF beams were burned off after the concreting was completed.

The coal unloader pier changes from a 30-ft by 80-ft caisson to a top plan of 30 ft by 120 ft. In addition, it has a landward cantilever 11 ft 6 in. by 61 ft. Again, 36-in. WF beams were used as supports for the top work. The beams were tied down inside the caisson with 1-in. anchor bolts and projected 20 ft through recesses in the pier. Top of this work was 70 ft above river pool making the use of a long-boom derrick boat necessary for handling heavy forms and concrete for the upper portion of the structure.

• **Building foundation**—Another major portion of the Dravo work consisted of driving 22 8 ft 6-in. dia sheetpile building foundation cells to solid rock at El. 402, excavating the cells, and tremie concreting to El. 458. The

cells were begun by positioning a circular steel bracing templet out in the river, setting 18-deg. crimped M-112 sheets 60 ft long around this templet, and driving them to rock. Following excavation of the sand material inside, bottom rock was churned with a heavy bit for removal up to a depth of 2 ft to 3 ft on the riverward row of cells, to socket the tremie concrete securely. Prior to concreting by use of a 75-ft tremie pipe and hopper, a diver inspected the rock bottom of each cell for cleanliness, and the condition of each sheet as it toed into rock.

To construct a discharge flume, which carries away the wastes from the plant, Z-piling was used. This flume, or tunnel, was built of MZ 22 and Belgian BZ III piling, varying from 30 to 65 ft long, and driven into the natural sand bottom. The flume is 10½ ft wide with the top at El. 454 and the bottom at El. 438, which means it is submerged during high water in the winter and spring. The bottom of the flume is a 2-ft to 3-ft thick concrete slab poured with a submarine bucket. The cover of the flume is a poured slab, varying from 1 ft 4 in. to 2 ft 4 in., supported by metal forms spanning the 10½-ft width and supported at each side by 12-in. channels welded to the inside of the sheetpiles. The total length of the flume is 359 ft, with allowance for continuation upstream.

• **Equipment**—Principal plant for this job included three 15-ton derrick boats with 85-ft to 135-ft booms. These boats performed all the pile driving, concreting, excavation, and dredging. From 4 to 6 deck barges were on the job at all times serving as storage for material and supplies, and as work areas. During high water, the job office, machine and carpenter shops were all located on barges.

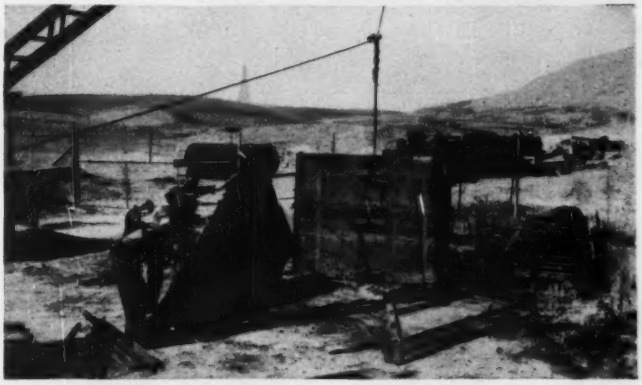
Concrete for the entire project was supplied from a 3-cy capacity central mixing plant, located about 1,000 ft shoreward from the riverbank. The mixer dumped directly into trucks having 4-cy non-agitating bodies, and concrete was conveyed thereby directly within reach of the derrick boats.

In charge of the overall project for Cincinnati Gas and Electric Company were H. R. Burns, Manager, General Engineering Department; L. V. Smoot, Engineer, General Engineering Department; and F. J. Martin, Resident Engineer.

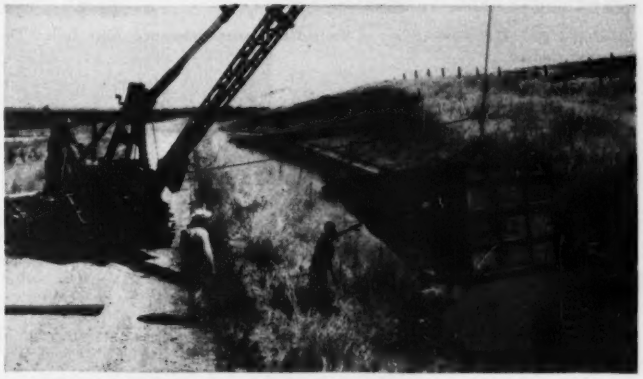
Ferro Concrete Const. Co. was general contractor for the entire project. Ferro's Project Manager was L. J. Backman, and the Superintendent was F. C. Buerger.

For Dravo Corp., W. A. Robinson was project manager and R. C. Hilte, supt. The author was field engineer.

Dam solves canal repair problem

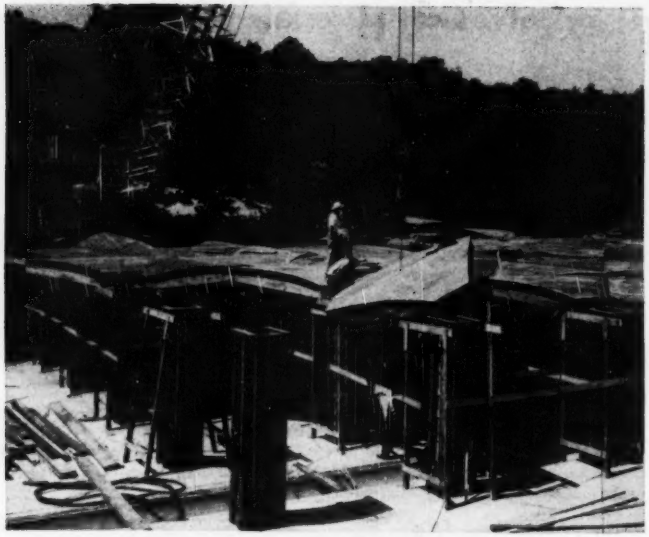


UNINTERRUPTED OPERATION of Contra Costa Canal in California's Central Valley Project called for a coffer dam within which work could be done on headgates, pipes and leaks. This versatile dam can be quickly assembled and . . .



trucked to the trouble spot and lowered into the canal. Alexander G. McIntyre, maintenance foreman, designed the dam so that sections can be added to adapt it to a wide range of work. After the dam is resting snugly against canal wall . . .

water is pumped out, and work begins. Favorable features of the dam are ease of handling, speed of erection and placing and a high degree of adaptability. If additional weight is needed, sandbags are placed on timbers across the top.



CURVED PANELS form arches of vaulted roof over waterworks filter beds. The carpentry paid off.

Forming arches seen cheaper than reinforcing slabs

A GROINED ARCH ROOF, despite its intricate formwork, was estimated to be 10% cheaper than simple, flat slab construction on an additional two-acres of water filters being built in West Hartford, Conn., to augment treatment works of the Metropolitan District's (Hartford) water supply system.

The vaulted cover will take just slightly less concrete than would a flat-slab roof with drop panels at the columns. But the real saving comes in reinforcing steel. In a 13x13-ft section of roof, the groined arch type of construction takes 186 sq ft of formwork to support 3.8 cu yd of concrete, but it requires only 112 lb of reinforcing steel.

Engineers of the Water Bureau of the Metropolitan District, figured comparative roof costs before building four ½-acre filter beds back in 1941. And again recently they checked estimated savings: The more complicated forming vs. costlier reinforcing. The dollar advantage still favors the arched roof, they claim.

• **Fancy carpentry**—The million-dollar filters being added at West Hartford are distinguished structurally by the sparsity of plane surfaces characteristic of groined arch construction.

A flat concrete subfloor was laid. After it had set, it was treated with waterproofing and became the base for a concrete floor with curves in two directions, forming longitudinal and transverse channels. In the transverse direction 10, 12 and 15-in. slotted split clay laterals will drain the filtered water.

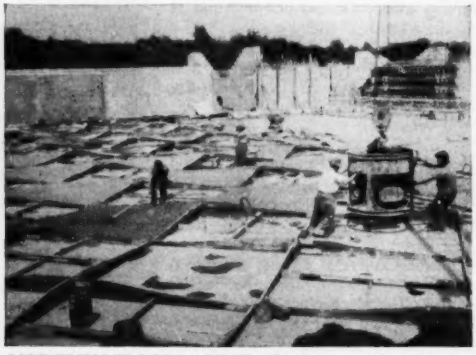
Roof-carrying columns are 20 in. square. They have flat sides, tapering out to 26-in. dimensions at column bases. Five 1-in. deep grooves 6-in. apart circle each column base to prevent water from flowing straight down a smooth concrete face without filtering through any sand.

Atop the columns rests the vaulted roof. One bay, a single pour, is a 26x26-ft section centered over four columns and cast on an even dozen curved surfaces of formwork. In every alternate roof bay there is a combination ventilating and access manhole. On 6-ft centers in the filters' longitudinal direction, pipehangers cast in the roof carry 6-in. cast-iron wash water pipe, and in the transverse direction, 4-in. laterals to 3-in. outlets.

There were 280 panels of curved formwork built for the four filters, and each panel got four uses. Mike Matthews, carpenter foreman for the general contract, has built a lot of formwork in his day—on Merritt Parkway bridges and elsewhere—but he takes particular pride in these Hartford filter covers with their elliptical (intrados) arches.

For quick and easy movement of roof form panels through their four uses, the contractor (White Oak Excavators, Inc. of Plainville, Conn.) has

READY FOR POUR—This typical roof bay, shows the secret of economy. The only reinforcing steel in the roof runs along each ridge line, circling manhole.



NOT EVEN FLOORS ARE FLAT—After a subfloor had been poured, these curved-surface sections were cast to form filter drainage channels.

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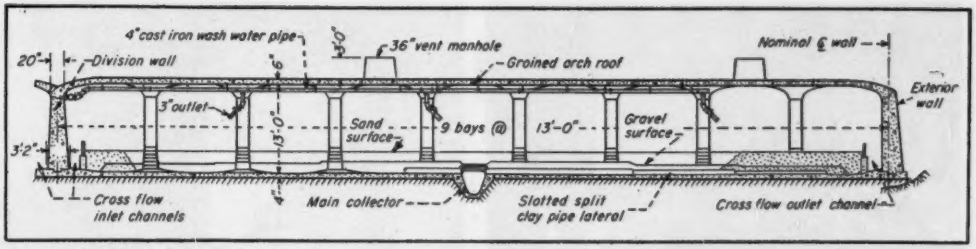


ONE OF FOUR NEW FILTERS that will add some 8½ mgd filter capacity to the West Hartford, Conn., plant. A new washing technique built into these filters is claimed to cut washing costs 20%. A cross-flow is set up in the washing process.

rigged an old wagon drill chassis with screw jacks. Cranked up to their raised position, the jacks support form panels as they are stripped from the roof. Then, with jacks lowered, the rubber-tired wagon is easily hauled to the position where the form is next to be raised and placed.

• **Scant reinforcing**—Second to the virtual lack of plane surfaces, the filter structures are distinguished by the small amount of reinforcing steel they require. The subfloor and the floor are unreinforced. There is not one reinforcing bar (not even a dowel) in any of the 128 concrete columns. Exterior walls—tapered to 2 ft from an approximate 3-ft bottom thickness through 10.5-ft height—are unreinforced, but are doweled into the roof.

Roof reinforcing is simple and slight. Four ⅝-in. bars follow each ridge line. No dowels tie the roof to columns.

There was an additional advantage to be gained in this design that used such a small amount of reinforcing steel. Steel was very much of a critical material throughout most of the construction period. But the problem of getting a sufficient supply was largely eliminated because so little was required. Thus, the project proceeded with a minimum of delay.

• **Filter description**—Filters are built up of 27 in. of sand on 12 in. of gravel. The gravel is in turn graded top to bottom into layers 2½, 2½ and 7 in. thick. Top layer size is ¼ to ⅜ in.; middle layer, ⅜ to 1 in.; bottom layer 1½ to 2 in. Specifications require the sand to have an effective size of 0.25 to 0.35 mm and a uniformity coefficient varying from a minimum of 1.4 to a maximum of 3.0, depending on the effective size.

Slotted split clay pipe of the drainage system lies level with open joints in the low point of the parabolic-curved concrete floor. These lateral clay collectors drain to a main collector along the longitudinal centerline of each filter. This in turn empties into a 20-in. cast-iron line to the regulator house which serves the four filters.

In the centrally located control house, water from each of the four filters is measured and recorded through a Venturi meter as it discharges to a 30-in. main effluent line.

Effluent lines from each bed are cross-connected in the regulator house so that filtered water from one bed can be used in initially filling another.

Filter rates in the four new beds will average 4½ mgd per acre and reach a maximum of 6 mgd per acre when operated in conjunction with existing beds at the plant.

• **New washing technique**—An innovation for filter washing has been built into the new beds, based on full-scale experiments by A. J. Minkus, engineer of purification for the Water Bureau.

Two narrow channels have been added to each bed, one along each long wall. During sand washing operations, one of these is to be an inlet for clear water; the other, 110 ft away, a drain for dirty wash water.

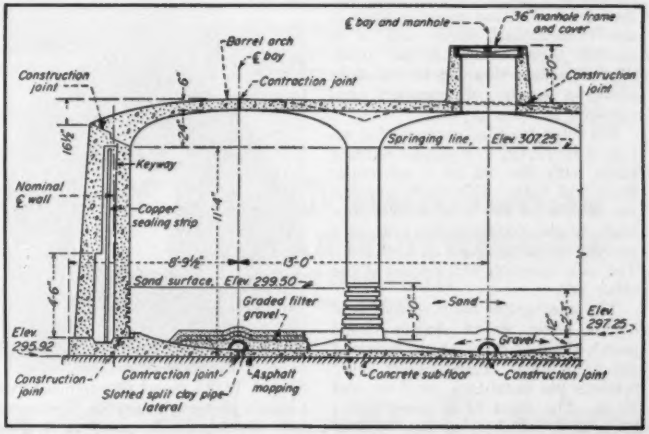
Washing procedure will be to start a horizontal flow of water across the filter from channel to channel. Simultaneously, the sand is to be agitated with a tractor-drawn harrow. Experience has shown that dirt can be kept in suspension until it reaches the drain.

Speed given the washing procedure by this new cross-flow device is claimed to cut outage about 30% and washing costs about 20%. These claims, it must be noted, are based on improvised installation of the device in existing filters over the last three years. (Mr. Minkus at a later date will present all technical data substantiating these claims.)

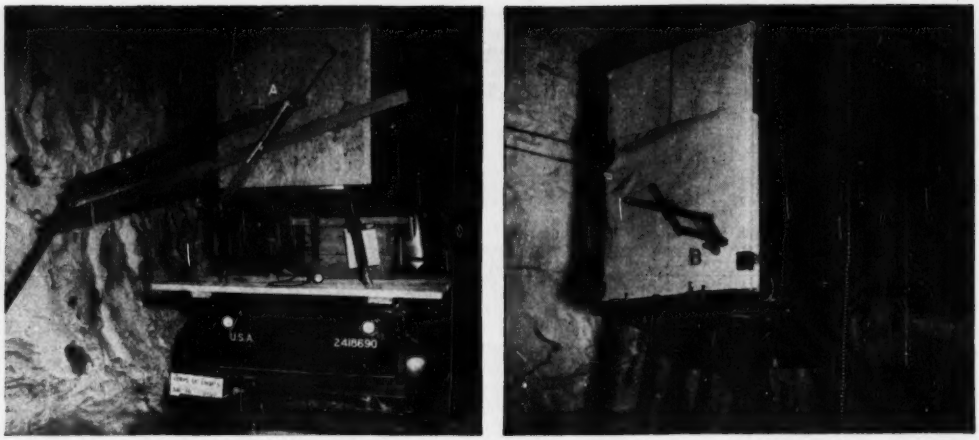
Filters are to be washed when lost head approaches 6 or 7 ft, the depth of water over the sand surface. Raw water has an average turbidity of 1.5 ppm and color of 20 ppm. Thus filter runs will average about 150 mg or about two months service.

Present work schedules anticipate the four new filters will go into use in the spring of 1953.

Warren A. Gentner is deputy manager and chief engineer in the Water Bureau of Hartford's Metropoltan District. Warren E. Dorenbaum is the chief designing engineer, Robert J. Grosch the resident engineer, and John Toffolon is superintendent for the contractor.



DETAILS of filter cover and filter bed are shown in section near outside wall.



LARGE BORE sectioner has two pantographic elements. Tracer (left) rotates about A. Movements of two members at A are transmitted separately, via concentric shaft and tube, to corresponding members of plotter (right), which draws outline at B. The device has been used successfully in work of the U. S. Army Corps of Engineers.

Pantographs give tunnel cross-section

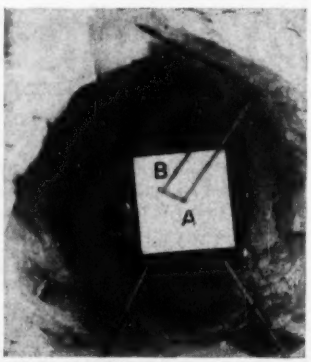
RAPID CROSS-SECTIONING of tunnel excavation now is accomplished on U. S. Engineer jobs, with the aid of pantographic devices. The pantograph is well known as a means of reducing or enlarging drawings, but use for such purposes as direct transfer of actual transfer of contours to paper is new.

As applied to tunnel cross-sections, the pantograph has an arm that is an extension of one side of the parallelogram. The tip of this arm traces the actual tunnel outline. Plotting takes place in one of two ways, depending on tunnel size. For small tunnels pantographic action is direct, the plotting pencil being fixed to the parallelogram's long side that is opposite the pivot. Plotting paper is fixed in the cross-section plane, and it is pierced to accommodate the pivot. The scale reduction can be varied by changing length of members, and changing location of point.

For large tunnels, pantographic action is translated to a parallel plotting plane with the aid of a concentric shaft and tube. The shaft transfers the motion of one side of the pivot angle to the corresponding side of a plotting parallelogram (see photos). The tube transfers the motion of the other side.

The pantograph for a six-foot tunnel is made up of ⅞x2¾-in. wood pieces, three of them 31 in. long and one 6 in. long. Parallelogram sides, between pin fastenings, are 5 in. and 30 in. The third 31-in. piece is the tracer arm, which is an extension of the short side opposite the pivot. Fastenings at three points are ¼-in. bolts with shakeproof nuts. The pivot fastening is a tubular rivet, which permits attachment and removal from the plotting board.

The plotting point is placed on the long side, opposite the pivot point and 5 in. from the fastening nearest the pivot (see photo). A spool attached to the slot holds the plotting pencil perpendicular to the paper. A rubber band holds the pencil firmly against the paper. Plotting board is a ¼-in. compressed-wood sheet bracketed to a plane table atop a tripod. This arrangement permits ready positioning of the plotting paper in the plane of the cross-section that is proposed to be taken.



SMALL BORE tunnel cross-sectioner uses a simple pantograph principle. Device rotates about point A; pencil at B plots tunnel outline to scale.

More complicated is the pantograph for a larger tunnel (15 ft to 30 ft). The tracing section is made of wood slats or aluminum tubes, of lengths depending on the tunnel size. The plotting unit remains constant, the scale reduction being dependent on the ratio between the tracer arm length and the plotter (pencil) arm length.

In use of the plotting board, a roll of cross-section paper is mounted on a spool behind the board at one side. A take-up spool, with crank, is mounted on the other side and paper is held tight on the board with large clips. When paper is advanced, the plotting unit is removed to permit this operation.

Tripod-mounted, the whole large-tunnel pantograph rides on a pickup truck. Longitudinal adjustment into the cross-section plane is made by sliding the pantograph's platform on top of the truck body. Screw jacks to the ground are provided to steady the truck while operations are carried on; they can be adjusted to provide a proper base level.

The device described here was perfected by Francis W. McGregor, Chief, Salt Lake City, Field Office, Sacramento District, U. S. Corps of Engineers. Mr. McGregor received a $275 cash award for his work under a Corps suggestion program. The device, engineers said, saved an estimated $10,000 on the Underground Explosion Test Project conducted recently in the Utah desert to determine effect of heavy blasts on various types of structures.

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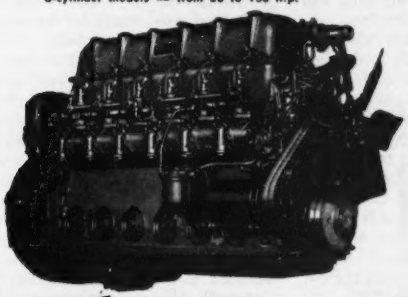

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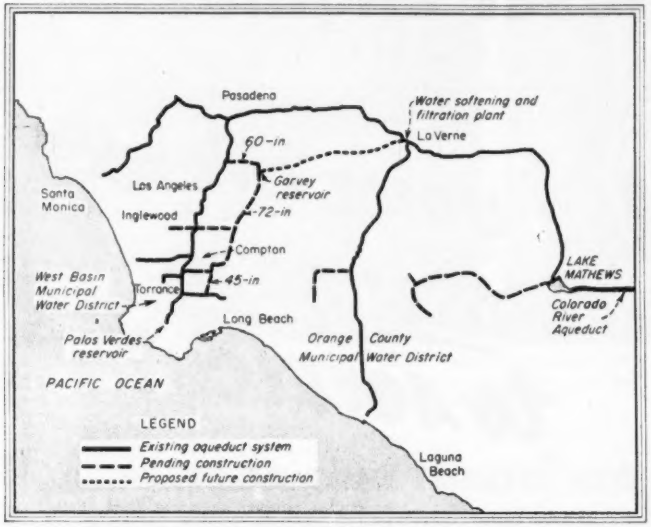

DISTRIBUTION SYSTEM for Colorado River Aqueduct water will be expanded as part of a $53-million program of Metropolitan Water District of Southern California.

California reservoir advances

The $53-million expansion program for the Metropolitan Water District of Southern California moved a step further with the late October award of a $3,143,694 contract for construction of a 1,500-acre-ft reservoir in the hills of Monterey Park, Calif.

The contract, awarded to Morrison-Knudsen Co., Inc., and R. A. Westbrook, includes laying 2,500 ft of 60- and 72-in. precast concrete pipe and construction of a road to the Garvey reservoir. Work is to start immediately; completion for April, 1955.

Most of the district's huge building program will be completed by July, 1955. Besides the Garvey reservoir, other main construction will include the installation of two additional pump units, motors and discharge pipes at each of five Colorado River Aqueduct pumping plants, and 125 mi of 30-in. to 72-in. dia distribution lines. The district is also paving for half the second barrel of the $18-million San Diego Aqueduct.

The new reservoir will have a nominal maximum water elevation of 570 ft above sea level, and will improve and supplement water service to present members of the Compton, Torrance, Long Beach and West Basin Municipal Water District, as well as southeast industrial sections of Los Angeles, and is potentially important to cities and industrial sections southeast of Los Angeles.

New pipe lines leading in and out of this reservoir will form a grid system, along with existing lines, and will later connect with the deferred lower feeder pipe line from Lake Mathews.

• **Project outlined**—Plans provide for construction of a 6.0-mi pipe line, 60-in. dia, connecting the reservoir with the present Palos Verdes branch line on the east boundary of Los Angeles. Extending south of the reservoir, to connect with an existing line, will be a 72-in., 250 cfs capacity line.

When the reservoir demands more intake capacity this middle feeder line will be extended 21 mi east to La Verne (location of the Weymouth softening and filtration plant), to use the capacity of the upper feeder. Other lines to be constructed in the current program from the middle feeder are an extension of a 3.0-mi 45-in. dia line, to connect with the Long Beach lateral and a 6.0-mi, 60-in. dia line, to serve a middle Los Angeles delivery. A new 4-mi line will also be constructed from the existing Palos Verdes feeder to serve Inglewood and vicinity.

The new pumps, at Intake and Gene plants, the Iron Mountain pumping plant, Eagle Mountain and Hayfield, are duplicates of the 15-year-old units now in use, and will be made by the same companies. Extensive studies showed substantial savings would result in operation and maintenance, spare parts, stock, etc., if the original pumps were re-ordered. An additional 10-ft dia steel discharge pipe will be required for all new pumps, increasing capacity to 1,000 cfs.

Work has been started on the half-capacity distribution line from Lake Mathews outlet works, building it to 750 cfs capacity. This is a 7,500-ft tunnel of 10-ft diameter inside the concrete lining. Eventually it will be completed across Orange County to the Los Angeles-Long Beach region.

• **Benefits**—For the immediate benefit of the recently annexed Orange County Municipal Water District, a 25-mi pipe line with 250 cfs capacity will be built to make deliveries into a reservoir and two large canals. It will be paralleled by a second line when more capacity is needed. A spillway will be constructed so aqueduct water can be discharged directly into the Santa Ana River below the canals, for spreading and percolation to aid in the replenishing of the underground water.

This is now being done on a smaller scale by discharging aqueduct water through a blowoff valve. This line will carry natural Colorado River water.

Other communities in the Orange County Municipal Water District, which need a softened, filtered source of supply for municipal and domestic use, will get such water from a new pipe line to be constructed from the La Verne-Laguna Beach line. This will connect with present and proposed lines of local water districts and mutual water companies. When necessary, this supply will be supplemented by connection to a new Lake Mathews line and eventual construction of a second softening plant.

The district, which had 13 member cities at the time the $220 million was voted for the Colorado River Aqueduct in 1931, now serves 47 incorporated cities, plus numerous suburbs. The service area has been increased from 600 sq mi to 1,570 sq mi, and the assessed valuation from $2.0 billions to $5.5 billions. Elections scheduled or in prospect may increase the area to 1,900 sq mi and its assessed valuation to over $6 billion. The district, with a maximum area of 2,500 sq mi, is now serving 62% of the potential, with 76% indicated for early next year.

New York City water board reorganizes its staff

New York City's Board of Water Supply, the agency that locates, designs and builds water supplies, has completed a reorganization to bring its staff more in line with present-day responsibilities. Emphasis has shifted from construction to research and development.

Need for a change became evident in 1947 when a study of new sources was ordered. The board's high-level engineering staff had become depleted. A new sources division had to be created.

That position now has become a full-fledged Research and Development Department under a deputy chief engineer, Henry Z. Pratt. It is on a par with the Design Department under Deputy Chief Engineer Stanley M. Dore, whose Sept. 1 appointment was announced recently, and the Construction Department under Deputy Chief Engineer Leroy Hammond. As construction work in the field has narrowed itself geographically (most of it now is in the Delaware watershed) all existing field departments have been discontinued and combined into the single Construction Department. This department handles contract and force account work including maintenance and surveys.

All three departments, through their deputy chief engineers, report directly to the chief engineer of the board's Bureau of Engineering, and to Karl R. Kennison.

In addition to reorganizing, the Board of Water Supply has classified all engineering positions and is trying to establish for them a salary rate comparable to that of private industry.

Administrative, as well as engineering, forces of the board have been reorganized somewhat. Since Richard H. Burke, secretary of the board, has been designated special counsel by the city's corporation counsel on the application to the U.S. Supreme Court for amendment of the 1931 decree limiting diversion from the Delaware River, he has been relieved of many duties now assumed by an acting secretary of the board. The secretary's office retains charge of the Police Bureau, responsible for protecting reservoir areas.

The secretary's office, the Bureau of Engineering and the fiscal units all report directly to the Board of Water Supply, Irving V. A. Huie, president.

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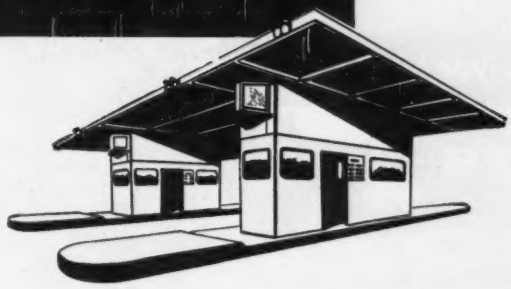

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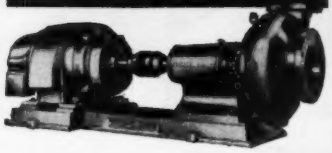

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GOV. ALFRED E. SMITH HOUSES, Section II, were opened last week on New York City's lower east side. The Brooklyn Bridge is on the left and the completed first section is immediately adjacent to the bridge.

Smith Houses II open in New York City

With appropriate civic ceremonies, the first families began moving into the second section of the Gov. Alfred E. Smith Houses in New York City's lower east side last week.

Built by the New York City Housing Authority, under the chairmanship of Philip J. Cruise, the development occupies an area once crowded with unsightly slums and antiquated industrial structures. It was built in two sections, as the most expedient method of rehousing the persons displaced by the destruction of the old buildings.

Had the entire area been cleared immediately, the city would have been pressed to find adequate housing for the 1,718 families occupying the intended building site. But by advancing the work of one portion first, some of the displaced dwellers of the Section II area were even able to move into the completed buildings of Section I.

The Smith project, which will house 1,935 families when fully occupied early next year, was financed by the city with state funds. Some of the other permanent city housing projects—which will total 80 when all planned units are added to those already completed—were financed by city or federal money.

• **Building features**—While each project undertaken by the city has some unique features of civic housing, the Smith project has some special distinctions:

• Under Director of Development William F. Brostek, the project has the tallest buildings—17 stories—of any project built or planned by the city.

• It is framed with structural steel (engineered by Elwyn E. Seelye) as was only one other New York City project, the Lincoln Houses, in Harlem. All others completed or in advanced stages of construction are of reinforced concrete construction.

• The houses are served by two elevators each, which stop only at alternate floors, one shaft serving odd-numbered floors, the other the even-numbered. The authority saved $300 per floor for each elevator door eliminated. Elevators in earlier projects stopped only at every other floor, forcing half the tenants to walk down one flight to reach their apartments.

• **Planning and costs**—The entire development was designed by the architectural firm of Eggers and Higgins of New York. Separate contracts were allotted for the construction of each of the two sections. Wilcox, Fish, Bein and McHugh of Long Island City handled foundation and construction of Section I on a base bid of $6.9 million and Caldwell-Wingate of New York City took Section II on a bid of $5.9 million.

When the entire project is completed and fully occupied early next year (barring what the city fathers call "unforeseen difficulties") the total cost of the project will have reached $29 million. The city's largest project, the 3,501-family, 35-unit Fort Greene Houses, was completed in 1944 at a

cost of $20 million.

In addition to having the highest buildings of any city housing project, the Smith project is the largest in the Borough of Manhattan. Another record the development set was the $684,500 spent on rehabilitation of the area fronting on the East River close to the project.

While the Smith group is only the second housing project to be built in separate sections (Astoria Houses was the first) 13 others under construction or planned will be built in two parts, and one—the 1,526-family St. Nicholas Houses in Harlem—is being put up in three units.

• **Occupancy**—Final occupancy of the project will mark the completion of the redevelopment of a 21.4-acre site in the shadow of the Brooklyn Bridge. Seven buildings of the 12-building group were completed as Section I in Oct., 1949.

Occupancy in the Smith project—a low-income housing unit—is limited to families whose income is not higher than $4,410 yearly. (This for a veteran with a family of six.) The average apartment rents for $36.79 ($7.92 a room) with gas, electricity and heat included in the price. Middle-income housing units, with higher salary limits, have proportionally higher rents but not much more in tenant services than the low-income houses.

San Diego fluoridates despite appeal in courts

Fluoridation of San Diego, Calif., city water began Nov. 10, just a year and 10 days after the city council voted 5 to 1 for approval of the process. During the year there was a running fire of debate on the action.

C. Leon de Aryan, publisher of a semi-monthly newspaper, took the issue to court. Acting as his own attorney, he obtained a temporary restraining order which delayed the city from purchasing fluoridation equipment. The restraining order later was dissolved.

County medical and dental associations have endorsed the program.

City water is being brought up to a content of one part fluoride to one million parts of water. Analysis shows that the natural fluoride content of the water is from 0.3 to 0.6 parts per million parts of water.

Roy Dodson, city sanitary engineer in charge of water purification, said about 72 tons of sodium fluoride a year will be used by the city at a cost of about $1,200 a month for labor and materials.

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INTERNATIONAL

Begin U. S. research centers in German, Swiss areas

The cornerstone for a new research center at Frankfurt am Main in Germany was placed recently by officials of the Battelle Memorial Institute, a U.S. research foundation based at Columbus, Ohio.

At the same time, it was announced that the research foundation is establishing another center at Geneva, Switzerland, and has set up a program of fellowships for selected students in the universities of both Switzerland and Germany. In addition, research centers and fellowship programs for other countries of Western Europe are being considered.

The Frankfurt research center will engage in chemical, metallurgical, and engineering research, and is already under construction on a site donated for the purpose by the city of Frankfurt. The laboratory will cost an estimated $1 million, and another half million dollars will be required for equipment.

Plans call for the Frankfurt laboratories to be completed for occupancy by late spring of 1953. The physical plant will consist of two major buildings, one four-story building 279 x 85 ft and one three-story structure 279 x 92 ft, connected by a three-story bridge. Another one-story structure, independent of the other units, will house heating and pumping equipment.

Canadian engineers study uniform registration

Uniform standards of registration of professional engineers throughout Canada are being sought by the Dominion Council of Professional Engineers.

Dean R. M. Hardy, of the University of Alberta engineering faculty and vice-president of the council, told the British Columbia Association of Professional Engineers in Vancouver that the council is recommending two years' apprenticeship before registration, a uniform syllabus of examination, and that Quebec register other than Canadian citizens.

British Columbia now has the highest standards in Canada. After graduation from a university, an engineer-in-training must have four years' experience, must present a thesis outlining his experience, and must appear before a board of examiners before registration. In Quebec a graduate may apply for registration immediately; in Manitoba, Saskatchewan and Newfoundland two years apprenticeship is required; in Ontario, one year. In Quebec only a Canadian citizen may apply.

Dean Hardy told the engineers the council did not believe the recommended specifications for registration would lower professional standards, that if professional consciousness were instilled in universities, the engineering code of ethics would protect the public against malpractice and prevent the professional engineer from doing anything that would not be a credit to his school.

Plan $1.4 billion roads to cut Italian accidents

Italy, facing the fact that it has the highest number of automobile accidents in Europe in comparison with the number of motor vehicles in use, has started consideration of a 12-year, $1.4-billion road program.

Italian engineers declare that the high accident rate is due to the fact that the nation's road system is still 50 years behind the times with regard to width of highways in relation to the speeds of motor vehicles.

Officials of the National Highway Corporation have outlined a plan for the national roads that would include:

A system of speedways exclusively reserved for motor traffic on the following routes:

Turin – Milan – Brescia – Verona –Venice–Trieste; Milan–the Lakes; Milan – Genoa; Milan – Bologna – Rimini; Genoa – Savona – Turin – Aosta; Bologna–Florence; Florence–Rome–Naples–Salerno; and others.

Some of these highways would be two-lane or more, some of them four-lane divided roadways, depending on the indication of traffic studies to be made shortly.

Study housing for coal-steel workers

Officials of the newly formed High Authority of the European Coal and Steel Community (the Schuman plan) are ready to begin a study of a coordinated housing policy for workers in western Europe.

An advisory subcommittee, which represents trade unions, housing experts and employers, has started a preparatory study designed to provide the basis for a program that will be urged upon the six countries that form the community.

Since housing is a major aspect of

production in Europe, the present intention is to take a kind of inventory of housing as it affects the two industries and the countries and to develop some common standard aimed at more and better housing at lower rentals.

International Briefs. . .

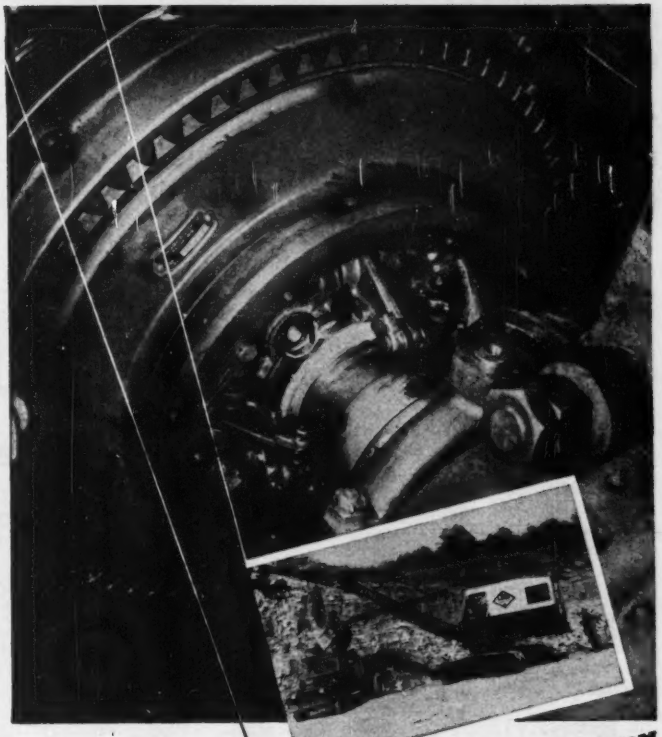
• **Portugal port planned**—A development plan for the Portuguese African territories of Angola and Mozambique is being considered by the Portuguese National Assembly. The development program is expected to require six years for completion. It is expected to cost about $470 million. The plan envisages an irrigation project to be established in Angola with the aim of providing a means of livelihood for a large proportion of the population of European extraction, as part of the overall program.

• **Complete Saskatchewan runways**—The first of two 6,200-ft runways being built at the Regina, Sask., Airport is virtually completed. The second runway is scheduled to be constructed next year. These two new runways will make the airport a full-fledged link in air transportation and defense setup of Canada. Each of the runways will cost approximately $2.5 million.

• **Guatemalan road**—The Guatemalan Highway Department expects to open a final stretch of 17½ miles of paved highway between Guatemala City and the Pacific coast port of San Jose late in December. Completion of this section will provide fully paved highway facilities for faster transportation from the interior of the country to the Pacific coast.

• **Pipeline completed**—A $1.6-million oil pipeline stretching for 57 miles between Milden, Sask., and Saskatoon has been completed in 71 days. It was built by the Saskatoon Pipeline Co. When in operation the line will carry Alberta crude from Milden to Saskatoon at the rate of approximately 3,000 bbl a day.

• **Subway for Auckland**—Auckland, New Zealand, city officials have announced a decision to proceed with preliminary planning on the electrification of the city's suburban railway lines and construction of an underground system. Work on the proposed system is expected to start some time in 1953.



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Like the manufacturers, the users of construction machinery, too, have settled on Twin Disc as the *sure source* of drives because they are dependable, long lasting, easy to service. And furthermore, because they are backed by the most complete service—Twin Disc maintains a $3¼ million stock of parts and replacement units at 8 Factory Branches and 60 parts stations strategically located for fast service.

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Austin pushes more ideas for construction

When George A. Bryant, president of The Austin Company, called his general executives, managers of the company's eight district organizations and three special service divisions together in Cleveland last week, he was primed, as usual, with new ideas.

One was a new production set-up for fabrication of 100-ft welded H-section trusses, latest addition to a long line of basic structural elements which Austin is equipped to turn out. This reflected the mounting interest in the wider spans and Austin's research approach to the problems of developing greater construction values by designs that lower mechanical equipment costs and permit maximum flexibility in layout.

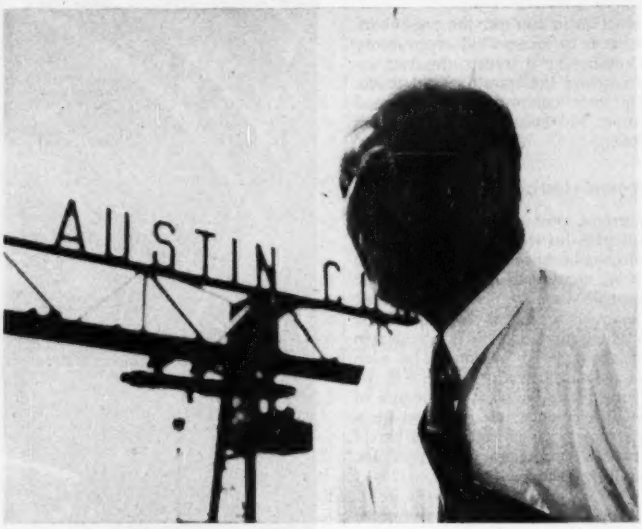
Other ideas came out as Austin engineering and research executives reviewed new concrete design and construction techniques which, they say, can be expected to yield greater speed and economy in buildings ranging from multi-story, commercial and institutional structures to the heaviest industrial facilities ever built.

With the test garage at the New Chrysler Engineering Proving Grounds already in service at Chelsea, Mich., where the new 100-ft standard trusses were used, and the first two studios in NBC's new 48-acre television center complete and in full operation at Burbank, Calif., less than seven months after the ground-breaking as a symbol of what can be done to cut time and costs by new concrete techniques being employed by his company, Bryant saw real opportunities ahead for a company with a long history.

To keep an old company young, new ideas are as necessary as capital and labor. But The Austin Company has never lacked for ideas although it has been in business for a long time. Now nearing an anniversary the company's leaders are looking back over their history.

The Austin Co. today stands on the eve of its 75th anniversary, an event that had its origin in Cleveland in 1878 when an immigrant English carpenter, Samuel Austin, undertook his first job as a contractor—remodeling a doctor's home.

Since that time, on five continents, the Austin Co. completed something like $1.5 billion worth of work, in some 8,000 installations, nearly 7,000 of these done the way it likes to build —"undivided responsibility." More than 70% of its volume represents "repeat contracts."



GEORGE A. BRYANT, president of The Austin Company of Cleveland, Ohio, is always looking for new ideas for his pioneer "one-package" company.

The job opportunities available in rebuilding the burned-out heart of Chicago (Oct. 8, 1871) lured the young carpenter, Samuel Austin, to the United States from the village of Orton Waterville, 60 mi north of London, where he was born June 16, 1850.

Friends in Cleveland induced him to remain in the Ohio city.

After six years of working for housing contractors, Austin took the offer to remodel the doctor's home, and the job led to others. In 1889 he entered the commercial field with the erection of a new building for the Broadway Savings Bank.

On May 7, 1904, his son, Wilbert J. Austin, a graduate of the Case School of Applied Science (now Case Institute of Technology) incorporated with his father the firm of Samuel Austin Son & Co. with a capitalization of $25,000.

These two men guided the company until Dec. 4, 1940, when Wilbert J. Austin died in the wreckage of a commercial airliner at Chicago, four years after the death of his father.

• **New leader**—The policies of Samuel Austin, who became chairman of the Board in 1925, when Wilbert became president, today are being carried forward by George A. Bryant, president since 1940 and a confidant of both founders.

Mr. Bryant, a Chicagoan, attended the University of Illinois 1907-09, and joined Austin in 1913 at Medicine Hat, Alta., Canada. He mounted the ladder fast.

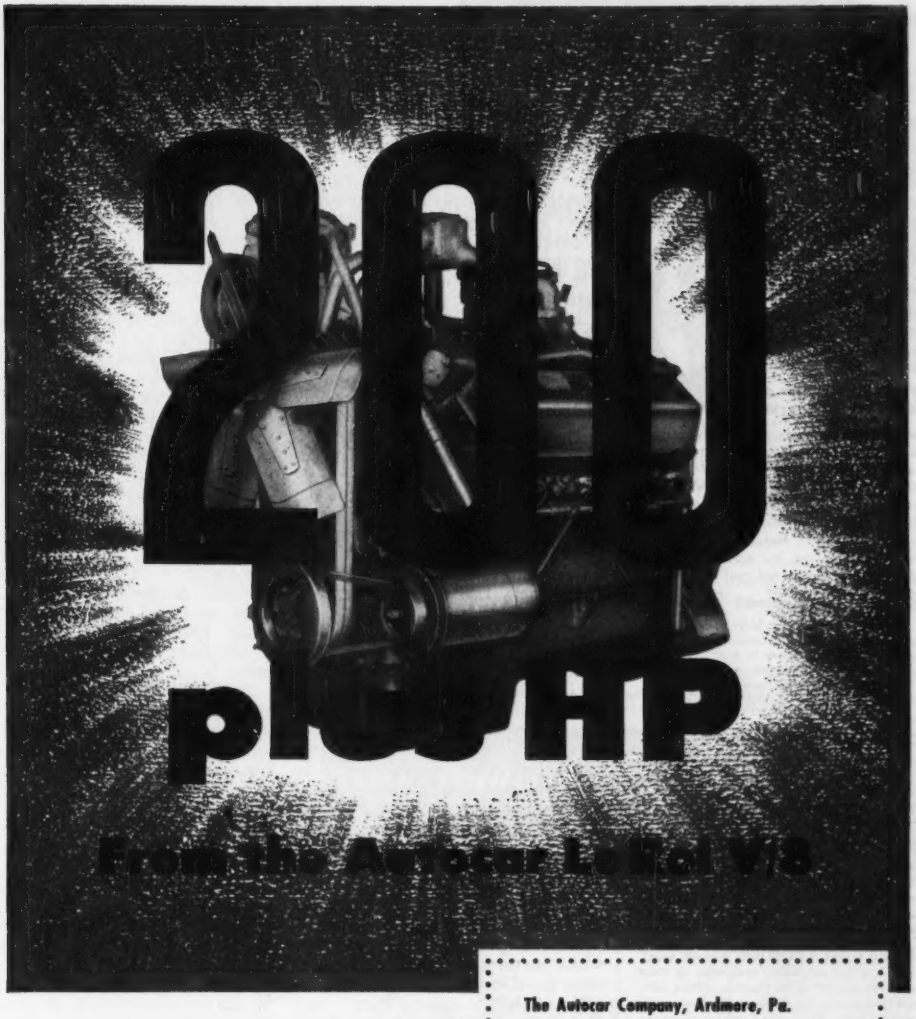
At the start of World War I he had charge of offices in New York, Washington and Philadelphia; in 1918 he became general sales manager; in 1930 executive vice-president, and five years later he was made general manager. On Dec. 26, 1940, he was elevated to the presidency.

Bryant, who feels that an Austin Co. plant must justify itself in service, voices a key policy that guides his men:

"Buildings are merely a means to an end—and never an end in themselves. If it is a manufacturing plant, it must be capable of producing more and or better goods at a price that will command a broad and stable market, and insure the owner a reasonable return on his investment.

"To do that it has to be in the right place and has to provide the kind of working conditions that will attract and hold employees. It has to be flexible enough to keep pace with changing demands and conditions in a

(Continued on page 50)



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MEN AND JOBS

(*Continued from* page 48)

world where the only sure thing is the certainty of change."

• **Accomplishments**—When the company was incorporated in 1904, its founders, pointed for work that would mean both design and construction—starting with the engineering and going through to the finished building. The idea has grown steadily with the years.

Ideally, Austin starts working with an owner before he is sure of what he wants to build or where he wants to build it. Frequently, the location is determined on the basis of economic surveys that involve an area of several states. Preliminary layout studies are then made (floor space, type of building, etc.).

"We do all engineering work in the building, including all facilities such as water supply, sewage treatment, industrial waste treatments, and processed steam requirements," said Joseph K. Gannett, vice president for engineering and research.

"About forty years ago," says Gannett, "we began to recognize that many of the things we were doing on an individual job basis could be simplified. The idea of standard buildings was a natural result. Ten basic designs were developed. This gave our fabricating shop an opportunity to make and pass along the savings that always come from duplication in any manufacturing process. We set up jigs for each of the designs and before long were fabricating beams and trusses for stock.

"We seldom compete for municipal work. Those plans are generally drawn by other engineers. We like to get in where we give the coordination and value possible in the one-package deal with undivided responsibility," says Harold A. Hallstein, Austin Co.'s executive vice president.

But the company has done some notable recent work for the U. S. government:

• At the $45-million atomic energy plant at Rocky Flats near Denver now under construction, Austin engineered the plant and organized the job with Austin men.

• At Oak Ridge, Tenn., it engineered most of the research laboratories and special facilities.

• Austin designed the building and some of the breeder reactor system for the National Reactor Testing Station at Arco.

• **Controlled conditions** — Another phrase in the Austin vocabulary is "controlled conditions"—a building in which conditions affecting efficient operation, such as light, temperature and humidity, are independent of natural sources. Other important conditions include reduction in noise, germicidal treatment of air, proper ventilation, elimination of odors and dust.

An example of this is the world's largest controlled-conditions plant, the Consolidated Vultee factory at Fort Worth, Tex., with 3,800,000 sq ft of floor space.

The development came about like this:

In 1929, Gifford K. Simonds, head of the Simonds Saw & Steel Co., Fitchburg, Mass., posed a question: "Why can't we lay out our plant without regard to construction, and have the weather conditions of a good summer day?"

Austin took him up.

It was an unorthodox idea—theoretically laying eight main lines of production in an open field and then putting up the plant around them.

A later development along this line is the integrated controlled conditions plant, which basically injects both standardization and flexibility into the plant.

In the last eight or nine years Austin has sold an increasing number of controlled conditions plants. At the same time it found many manufacturers believed them. The answer was a "convertible" design.

"Briefly, we install half the ventilating and heating equipment as in controlled conditions. Then, when the client is ready to put in air conditioning, he can add the equipment needed without disturbing any of the equipment already in place, and without sacrificing any of his original investment." Gannett stated.

Austin has even taken claustrophobia into consideration by eliminating that "walled-in" feeling with color schemes, murals and narrow bands of sash.

• **Construction firsts**—For about 20 years Austin has had a research division, now headed by A. T. Waidelich, company vice president. It fits like this:

Early in World War II, the company started to search for a basic new truss design adaptable to almost any loading pattern.

Research gave them the answer in rolled H and I sections which were simply cut to length and welded one to another. With continuous H-beams to distribute loads evenly along the top and bottom, and members that could be increased in strength without any change of dimensions by

the use of heavier sections, they could meet virtually any problem without losing the economies obtainable through standard designs and jig production.

Another development has been further work on prestressed beams. This is the key to the successful use of 60-ft prestressed girders in construction of the F. W. Wakefield Brass Co. plant at Vermilion, Ohio.

A previous successful application of the prestressed design in 1937, on a 1.5-mg water tank, was a forerunner of prestressed concrete tanks now standard for naval fuel storage.

Another contribution was the development of the so-called "breathing wall", first used at the Fort Worth plant.

Other pioneering includes welding. Today most Austin buildings have shop-welded steel frames with either field-welded, field-riveted or field-bolted connections. Austin was first with the all-welded building developed by W. J. Austin and the late H. E. Stitt, chief engineer during the '20s.

The company is currently developing designs to be used with lift slab construction, "which we think have merit," said J. K. Gannett.

• **Television too**—Planning for the future includes work in the television industry. Today it has designed and built 18 stations (studio and transmitters), which comprise nearly 20% of the total in the United States.

A recent development in the television field that promises to grow is the "tele-truss" installed in Station WCAU, Philadelphia. This is a portal truss without any diagonal members so that space between the trusses can be used to greater advantage.

Recently Austin finished, in fast time, the first section of the National Broadcasting Co.'s Hollywood TV center at Burbank, Calif.

And there is even an Insulated Building Division which specializes in the design and construction of insulated "twin-wall" (double-walled) building construction, complete with engineering, manufacturing and erection crews.

• **Company policies**—The founder of the organization, Samuel Austin, believed key men should be rewarded for their efforts. Key employees of the company today enjoy the profits of a bonus plan inaugurated by Austin.

Harold A. Hallstein, executive vice-president, said that the salaries of key men, exclusive of bonuses, meet the general average in the business today. The salaries of the top executives,

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though, are low in proportion, but are increased by bonuses and other income from the company.

The founder saw to it that the Austin Co. would remain in the hands of key employees and his family. Today in excess of 50% of the common stock is owned by key personnel. The remainder is principally in the hands of the Wilbert J. Austin family and in a trust established by Samuel Austin, with his three remaining daughters and their heirs as beneficiaries.

Shares held by the employees are "lifetime stock," purchased under an agreement which provides the company with a repurchase option on severance or death. In the last 32 years there were only three years in which there was no dividend on the common.

A bitter family rift developed over the years because of Samuel Austin's bequests to his daughters. Today some 35% of the common stock is owned by the heirs of Wilbert J. Austin, while about 10% is in the hands of a trust for Samuel's daughters and their heirs.

The four daughters, one now dead, and their heirs, 39 in number, were rebuffed in September, 1952, in an attempt to unseat the Cleveland Trust Co. as trustee of a trust set up by Samuel Austin.

After hearings lasting four months last year Judge Julius M. Kovachy of Cuyahoga County Common Pleas Court, absolved the Cleveland Trust Co. of mismanagement charges bought by the heirs.

Former chief of logistics gets high post with IT&T

Maj. Gen. Edmond H. Leavey, U.S.A. (ret) last week was elected a vice-president of International Telephone and Telegraph Corp.

General Leavey has had extensive experience in both the operational and administrative fields of engineering. Prior to his retirement in 1952, he was chief of the logistics division of Supreme Headquarters of the Allied Powers in Europe (SHAPE). During World War II, he occupied key posts in both the European and Pacific theaters.

A native of Longview, Tex., General Leavey entered the U. S. Military Academy and was graduated in 1917. He received his civil engineering degree from Rensselaer Polytechnic Institute in 1922.

From 1932 to 1940, General Leavey served in important administrative and engineering capacities with the Works Progress Administration

MAJOR GENERAL E. H. LEAVEY, U.S.A. (ret) is newly elected vice-president of IT&T.

in New York and Washington, D. C., becoming assistant commissioner and chief engineer of the Washington office in July, 1940. A short time later, he was named chief of the engineering branch, construction division, in the offices of the Quartermaster General and Chief of Engineers.

Promoted to the permanent rank of Major General in January, 1949, General Leavey retired from the service at his own request in June of that year.

In February, 1951, he was recalled to active duty to become chief of SHAPE's logistics division.

The recipient of many military honors, General Leavey also holds honorary degrees of Doctor of Laws and Doctor of Engineering from Texas A & M and Rensselaer Polytechnic Institute, respectively.

General Leavey, a registered professional engineer in civil and industrial engineering, state of Texas, is a member of the ASCE and various clubs and fraternities.

Hale leaves Reclamation to head a water district

Charles S. Hale, a Bureau of Reclamation construction engineer, last week left as project engineer on the San Diego aqueduct's second barrel to become general manager and chief engineer of the Coachella Valley County Water District.

Hale, who had 24 years of reclamation service, was asked to take over operation of the distribution system, built under his supervision.

E. G. Nielsen, director of the Bureau of Reclamation's Region 3, stated that the water district's choice is a high compliment to Hale.

Hale's return to Coachella Valley will be a homecoming. He left the valley last August to take over construction of the San Diego aqueduct's second barrel. Prior to his transfer he was construction engineer on the Coachella branch of the All-American canal system in charge of building the 123-mi main canal and the underground concrete pipe distribution system to serve 78,500 acres in the valley.

Hale started as a levelman on a reclamation survey party in 1918. Then he left Reclamation for 10 years.

Returning to the bureau in 1928 as an instrumentman he served in successively higher posts to division project engineer.

He was born in Rocky Mount, Va., and was educated at Virginia Polytechnical Institute, in Blacksburg, Va. He has published several magazine articles on construction.

NLRB names O. W. Fields as executive secretary

Ogden W. Fields last month was appointed executive secretary to the National Labor Relations Board.

Fields succeeds Louis R. Becker, executive secretary since 1951, who resigned after 14 years with the board, to open the Washington, D. C., office of Gordon and Epstein, a Boston law firm.

Fields assumed his new duties on Nov. 1, the effective date of his predecessor's resignation.

An employee of eleven years' service with the NLRB, Fields first went to the board's Chicago office as a field examiner. Two years later he moved to the Seattle Regional Office.

In 1944 Fields transferred to the Washington headquarters of the board, where he was successively promoted to administrative examiner, administrative officer, and associate executive secretary.

Naval civil engineer gets high post in BuDocks

The Navy has assigned Commander Palmer W. Roberts, CEC, USN, to be an assistant director of the Pacific-Alaskan Divisions of the Bureau of Yards and Docks. He will take up his new duties Nov. 28.

During World War II he was War Plans Officer (Construction) for the 13th Naval District and then administrative officer for the Alaskan Division of the Bureau. After the war he was in charge of exploration for oil at Point Barrow, Alaska. Earlier he had charge of construction of the Naval Air Station, Kodiak, Alaska.

OBITUARIES

Henry Traxler, 64, a civil engineer and former Milwaukean who won a national reputation in municipal administration while city manager of Janesville, Wis., died Nov. 5 at Los Angeles, Calif. He had lived there since his retirement in April, 1951. He was city manager of Clarinda, Iowa, before becoming city manager at Janesville, a post he held 27 years. He was a former president of the League of Wisconsin Municipalities and the Wisconsin City Managers' Association.

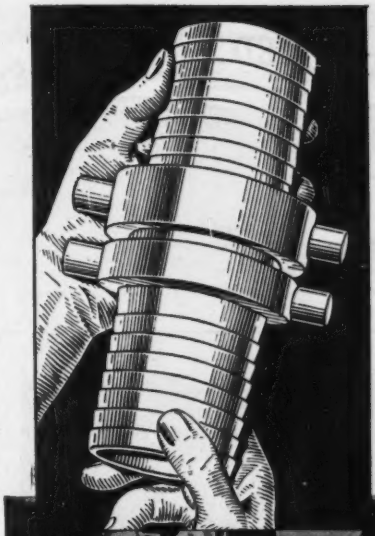
James J. Canter, 64, head of the Canter Construction Co, Brookline, Mass., died at Boston Nov. 8. A graduate of Harvard Engineering School, he was chief engineer for the Commonwealth Pier construction at Boston, former state engineer for river and harbor improvements in Massachusetts, and senior engineer with the U. S. War Manpower Commission.

Edward A. Schuch, 49, chief engineer of Aero Service Co., aerial photograph map makers of Philadelphia died at Feasterville, Pa., Nov. 11. He was top technical man for the company, which has handled such assignments as the mapping of the site for the hydrogen bomb plant at Aiken, S. C.; of routes for the New York Thruway and the Pennsylvania Turnpike extension, and of parts of the Missouri River Valley and other flood areas.

J. George Smith, 84, retired civil engineer, died in Berkeley, Calif., recently. He was graduated from the University of California in 1890, and engaged in engineering in Berkeley. He later entered the real estate business, subdividing tracts at Half Moon Bay, Hayward and Richmond, Calif.

Theodore Gary, 98, pioneer advocate of good roads in Missouri, died Nov. 3 in Macon, Mo. At the age of 67, he became chairman of the Missouri State Highway Commission, and spent freely of his own funds to study European road construction. His efforts won for him the designation, "father of the Missouri hard road system."

L. U. Noland, 67, chairman of the board of the Virginia Engineering Co., Inc., Newport News, Va., died at Rochester, Minn. Oct. 29. He had been active in the construction industry for 37 years. He received the Meritorious Civilian Award and was made an honorary Seabee in 1946 for his war work activities.



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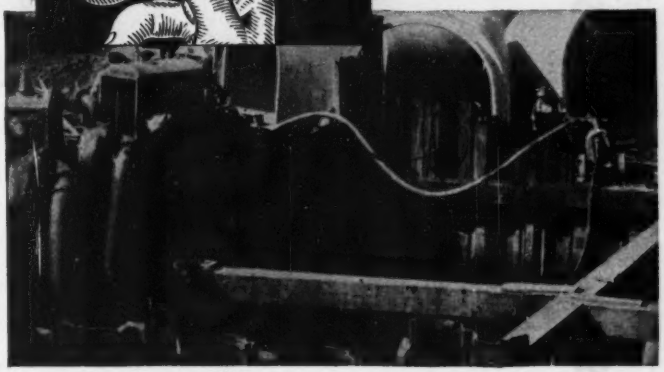

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By **R. A. Phelps,** Structural Engineer
St. Paul, Minnesota

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Fig. 3. 9 Story—*all welded framework for Veterans Administration Hospital, Minneapolis, Minnesota. Contractors, J. D. Hedin Construction Co., Inc., Washington, D. C. Architects, Veterans Administration Construction Service. Inset shows simple girder-to-column connection.*

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Fig. 1. Typical Riveted Connection *of floor beam to column. Auxiliary steel required: 53 rivets (⅞"); 4 pieces 18" I beam; 2 pieces 6" x 4" angles; 2 pieces 4" x 3½" angles.*

Fig. 2. Typical Welded Construction *of floor beam to column. Auxiliary steel . . . only 3.2 pounds welding rod; 4 erection clips.*

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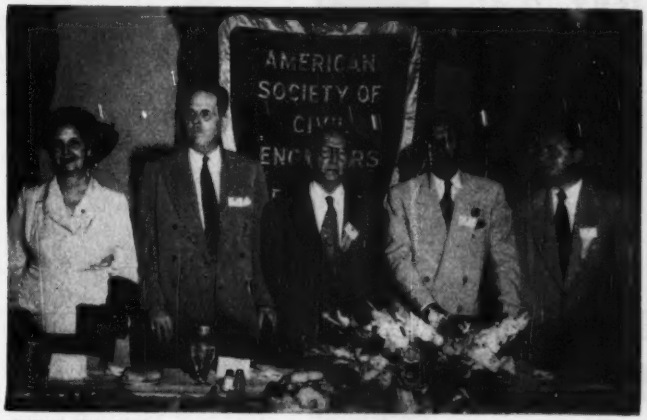


GUEST SPEAKERS at the inter-American convention held in San Juan, Puerto Rico, included (left to right): Mayor Felisa Rincon de Gautier of San Juan, P. R.; Carlton S. Procter, past president of the American Society of Civil Engineers; Étienne Totti, general chairman of the convention; Mayor C. J. Senerchia of Miami, and William C. Hill, president of the Puerto Rico section of the ASCE.

Water use, soil and transport feature Puerto Rico meeting

Elsie Eaves
Manager, Business News Department

Sound engineering for rapid economic progress dominated the inter-American convention of the American Society of Civil Engineers, held in San Juan, Puerto Rico, Nov. 12-16. In attendance were engineers from Peru, Uruguay, Paraguay, Venezuela, Cuba, Virgin Islands, Haiti and the Philippine Islands, and many from mainland U. S.

The problems that stem from high population densities were tackled in the regional papers that accounted for almost half of the technical program. These included plans to bring more acreage into food production, plans to develop power to support industrialization, sanitation to raise productivity through better health, and increased transport facilities—both highway and air.

With Puerto Rico itself serving as a successfully operating, full-scale pilot plant, Antonio Lucchetti, executive director, Puerto Rico Water Resources Authority, presided over the meetings devoted to "conquering the wealth of nature."

• **Big project for Haiti**—Details of Haiti's multi-purpose Artibonite Valley project were given by Marcel Thebaud, chief engineer of Service Cooperatif inter-American de Production Agricole.

Mr. Thebaud set the Haitian scene: Farms average just over one hectare per farmer whose tools are a hoe and a machete, and whose production is too low to sustain the life of the island republic.

The Artibonite project is designed to drain a salt plain, leach the salts out of the drained land, control floods, provide irrigation water, and later to develop low-head power to attract industries that will draw workers away from the land and raise the average unit to be farmed to 100 hectares, where mechanization for more productive farming will be economically sound.

The most spectacular feature of this project will be Peligre Dam, said to be the highest concrete buttress (contrefort) type dam yet built. It will be 60 meters high and 240 meters long at the crest, with short earth dikes at the abutments, and will have a maximum storage of 600 million cubic meters.

Estimated cost of the dam is $8 million, including access roads. The whole Artibonite Valley project is being financed by a $14-million loan from the Export-Import Bank, and $7 million provided by the Haitian government. Signing of the contract with Brown & Root of Houston, Tex., to build the project kept Raoul St. Lo, engineer member of the board of administration, from being present at the meeting.

Immediate relief for Haiti's problem of excess land for available water is being tackled by making 20% more productive use of existing water through crop consumptive-use timing. The big water users are also the three big cash crops: bananas, sugar cane and rice, each with different growth cycles. Accurate timing of irrigation produces maximum growth with minimum water.

Details of how this is being done were given by George H. Hargreaves of the Institute of inter-American Affairs and Andre Cauvin, hydrologic engineer and director, Meteorological Section of the Ministry of Agriculture, Port-au-Prince.

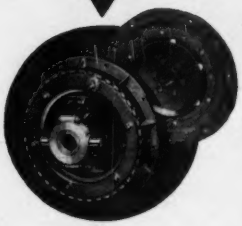
• **Other irrigation work**—Colombia and Venezuela are both starting their first large-scale public irrigation developments, but for different reasons. Both have under cultivation all land that will produce crops without irrigation; both have rapidly growing populations; both are importing food. But Colombia is a dollar-short nation, must produce its own food so that dollars can be used to raise living standards. On the other hand, Venezuela's oil, fabulous iron ore deposits and diamonds yield nothing but more dollars—she has to import a very high percentage of her food, even far into the interior.

Solution of these problems was discussed by Olin Kalmbach, vice president of Royce J. Tipton, Denver. Soil quality varies widely, but as a general rule, areas with deficient precipitation have the better soils since excess precipitation leaches minerals required for maximum fertility. Power needs are so great that any power, firm or not, is considered worth producing.

In Venezuela, 15 or 20 projects are being studied, mostly on the fringe of zones accessible to the interior, where good access by road either exists or is being built. Venezuela now has only 60,000-70,000 hectares of land under irrigation, but by 1970 expects to have 1,500,000 hectares. Most of this is in the area between the Andes and the floodlands of the lower river valleys. This means an annual increase of 75,000-100,000 hectares.

Colombia has had two public projects in progress since 1948, one to irrigate 10,000 hectares and a second to bring in 15,000 hectares. These are in rugged, inaccessible country

Smooths The Way



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• **Foundation problems**—Foundation problems peculiar to Puerto Rico were described by J. L. Capacete of the Foundation Engineering Co. of Puerto Rico, San Juan. Puerto Rico's complex geology gives a wide variety of soil and foundation problems on both sides of the insular divide. Three-fourths of the island is covered with residual soils where chemical weathering is far more important than physical weathering. The bearing capacity of peats and soft silty clay is so low that even the smallest structures must be pile-supported. And pile foundations must be designed for negative skin friction, which on some occasions may be more critical than the design load.

• **Sanitation**—Pollution control in Puerto Rico's Rio Grande de Loiza watershed, to take some of the load off the new Loiza filtration plant has special local problems: High population density, both urban and rural, produces a large volume of waste in relation to dilution. In addition, a long pollution survival rate results from the salubrious climate prevailing in the Caribbean area.

Although the filtration plant is designed to handle these conditions, intensive watershed sanitation measures already in effect were described by Mortimer M. Gibbons, sanitary engineer, Puerto Rico Aqueduct Authority, Santurce. Of five sewage treatment plants serving urban areas one is under construction, two are being reconditioned and two are being raised to higher degree of treatment. A rigid sanitary patrol has been established to enforce both rural and sugar cane pollution control.

• **Transport**—Studies for traffic forecasts for the new international airport at San Juan illustrate the rapid economic development in Puerto Rico. Walter Prokosch of Knappen-Tippets-Abbett-McCarthy and their associated architects Toro, Ferrer & Torregrosa of Puerto Rico, summarized these: Personal income in constant dollars increased 70% from 1940-50 and another 27% in the next two years. The 10-year increase is more than double the rate in the U. S. and almost two-and-a-half times the rate of increase in booming Canada. Building permits in Puerto Rico are up five times in 10 years; overseas air passengers are up five times; electric power production is up four times and imports and exports are up three times.

Experts talk tropical building

F. S. Merritt
Associate Editor

Many people still believe that the only way to beat the heat is to drown it out with rum. The experts who last week attended the conference on housing and building in hot-humid and hot-dry climates, at the National Academy of Sciences in Washington, D.C. (sponsored by the Building Research Advisory Board), offered some attractive alternatives.

Suggestions ranged from proper orientation and shading of buildings to installation of the latest types of mechanical cooling equipment. But it is clear that comfortable housing in the tropics need not be expensive.

In organizing the conference, William H. Scheick, BRAB director, said that building research has traditionally dealt with design and construction in temperate zones. This has been the natural outgrowth of population concentrations occurring first in those areas. Today, however, vast numbers of temperate-zone people have spread to tropical and sub-tropical areas, both in the U.S. and elsewhere. The expectancy of comfort among these people has far outrun the technological advances in this special type of construction. Hence it was felt that a symposium approaching the problem from this viewpoint—that is, one that does not concern itself primarily with low-cost native housing—was badly needed.

• **No two places alike**—One illusion that went by the board as soon as the conference opened is that the tropics denote a definite set of temperatures and humidities, for which a standardized building could be designed. As Ralph Walker, of Voorhees, Walker, Foley & Smith, showed, the tropics include a wide variety of social, geographical and climatic conditions, and many kinds of natural resources.

• **How to keep cool**—In employing natural ventilation, buildings obviously should be placed with the long direction perpendicular to the prevailing wind. But what is not so obvious is that unobstructed cross ventilation may produce some annoying drafts, or may be too cool for certain purposes and too windy for others.

Studies of natural ventilation made at the Texas Engineering Experiment Station, College Station, Tex., shed some light on air flow patterns. According to Bob H. Reed, assistant research architect at the station, tests show that maximum air speeds within a building are acquired when the inlet opening is relatively small and designed for distribution, and the outlet opening is made as large as possible.

Solar radiation may be stopped partially by a wall-cover of vines. And roofs, too, may be covered in the same manner as the walls with good effect.

Other techniques for keeping cool that were discussed included insulating walls and roof, water sprays on the roof, evaporative cooling, dehumidification and air cooling by refrigeration.

• **How materials stand up**—There are, however, other problems than providing comfort conditions that designers of tropical buildings must solve. One of the most important of these is the selection of suitable building materials. Constant presence of moisture in some areas, high temperatures and strong solar radiation cause many materials that are satisfactory in temperate zones to deteriorate. Surface molds discolor some and insects attack others.

B. M. Holmes, of the Division of Building Research, Commonwealth Scientific and Industrial Research Organization, Melbourne, Australia, reviewed published work in this field and supplemented it with information he had collected. His conclusions in brief are:

1. Galvanized iron gives trouble in exposed marine areas. Even copper wire insect screens are short-lived under such conditions. Aluminum, however, stands up well.

2. Portland-cement products are subject to little deterioration that may be attributed to the climate, but trouble may be encountered from the water used, conditions affecting cement storage and poor workmanship.

3. Earth, suitably stabilized and waterproofed, appears to be a satisfactory building material.

4. Timber is prone to attack by physical weathering, fungi and insects, but techniques are available for combatting these.

5. Paint performance, generally, is poor in hot climates. Good performance, however, has been observed for alkyd-resin-fortified bases.

6. Deterioration of plastics can be avoided by careful selection of resins, fillers and plasticizers.

7. Asphaltic building materials are much affected by exposure to sunlight.

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NEW ENGLAND

BIDS ASKED—BUILDINGS

▲ **Mass., Weymouth**—HOUSING—B.A. 12/5—Weymouth Housing Auth., 77 Memorial Dr., 2 story, bsmnt., frame, stucco housing, Proj. 200-2, East Weymouth. $1,800,000. M. A. Dyer Co., 24 School St., Boston, archt. CD 10/1/51.

▲ **Mass., Boston**—HOUSING—B.A. 12/12—Boston Housing Auth., 230 Congress St., superstructures, 1,428 housing units, Proj. Mass 2-20, Columbia Point, Dorchester. $18,000,000. Extended date. M. A. Dyer Co., 24 School St., archt. CD 11/5.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Bagley-Mucci, Inc.**, 6 Dexter St., Medford, Mass. CA **$214,412**, enlisted men's barracks, at Municipal Airport, Spec. 32428, PORTSMOUTH, N. H. P. Wks. Office, 495 Summer St., Boston, Mass. Bids Oct. 30. CD 10/15.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Vara Constr. Inc.**, 718 Huntington Ave., Boston, Mass. LB. **$1,063,000.** Bruce Elementary SCHOOL, Providence, Milton and Butler Sts., LAWRENCE, MASS. City, City Hall, Lawrence, Mass. Bids Nov. 14. CD 10/22.

▲ **Thomas O'Connor & Co., Inc.**, 230 Main St., Cambridge, Mass. CA. **$16,613,400.** Unit No. 6, Edgar POWER PLANT addn., North Weymouth, WEYMOUTH, MASS. Boston Edison Co., 39 Boylston St., Boston, Mass. (Correction—cost). CD 10/3, under CA.

† **Plantations Constr. Co., Inc.**, 1089 Greenwich Ave., Warwick, R. I., LB **$358,195.** Sims HALL alterations, Naval War College, Spec. 32419, NEWPORT, R. I. P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass. (Correction-contractor). CD 10/29 under LB.

Joseph P. Flynn, 26 Custom House St., Providence, R. I. LB **$378,850.** Stephen Olney and Fruit Hill SCHOOLS addns., NORTH PROVIDENCE, R. I. Town, Supt. Schools, 1828 Mineral Spring Ave., North Providence, R. I. Lucio Carlone, 57 Eddy St., Providence, R. I., archt. CD 9/26/51.

▲ **Frouge Constr. Co., Inc.**, 74 Goodsell St., Bridgeport, Conn., CA. **$5,287,000,** 450-unit moderate rental HOUSING, Slater Rd., NEW BRITAIN, CONN. City Housing Auth., 16 Armistice St., New Britain, Conn. Bids Oct. 21. CD 10/27, under LB.

▲ **West Hill Park Corp.**, 35 Farmington Ave., Hartford, Conn. Owner Builds. **$4,000,000,** single RESIDENCES 92-acre tract, NEWINGTON, CONN. Julius Berenson, 48 Forest St., Hartford, archt. CD 3/7.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

N. Y., New York—PLAYGROUND—B.A. 12/1—Coordinator of School Constr., 49 Flatbush Ave. exten., Brooklyn, Zone 1, general constr., plumbing and drainage for constr. of playground, P.S. 30, Brook Ave. and E. 141 St., Bronx Boro. Plans deposit $6.

BIDS ASKED—BUILDINGS

▲ **N. Y., New York**—HIGH SCHOOL—B.A. 12/8—Bd. Educ., Bureau Constr., 49 Flatbush Ave. exten., Brooklyn, Zone 1, Junior High School 120, 161 St., from Trinity to Caldwell Aves. $2,063,000. Plans deposit $30.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Corbetta Constr. Co.**, 220 E. 42 St., New York 17, N. Y. LB **$3,927,068,** pier and bulkhead shed superstructure and other work of New Pier 57, North River, Manhattan Boro, Const. 2751, NEW YORK, N. Y. Comr. Marine & Aviation, Pier A, North River, foot of Battery Pl., New York 4, N. Y. Bids Nov. 14. CD 10/15.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton,

D. Catrupi & Sons, Inc., 2160 N. Hoyt Ave., Fort Lee, N. J., CA, **$1,242,469,** grading, bridges marginal roads 1.373 mi. Section 2-H of Palisades Interstate Parkway from Bayview to Palisades Aves. Englewood Cliffs, Bergen Co.;

Union Bldg. & Constr. Corp., 631 Main Ave., Passaic, N. J. CA, **$294,269,** 1.1 mi. Route S-3 spur from Allwood Rd. to Van Houten Ave., Clifton, Passaic Co. Bid Oct. 28. CD 10/9.

▲ **NEW JERSEY**—New Jersey Hy. Auth., State Hy. Office Bldg., Trenton,

Construction Aggregates Corp., 1 E. 42 St., New York, N. Y. C. CA, **$1,893,130,** grading stabilization, Section 7 of Garden State Parkway from Keyport-Matawan Rd. to Ernston Rd. Matawan and Madison Twps., Monmouth and Middlesex Counties. Bids Oct. 16, awarded Nov. 5. CD 9/29.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Planet Constr. Co.**, 11 W. 42 St., New York 18, N. Y. LB **$2,037,000,** general constr.;

Daniel J. Rice, Inc., 41-50 38 St., Long Island City N. Y., LB **$324,000,** heating for new Junior HIGH SCHOOL 57, Stuyvesant and Lafayette Sts., BROOKLYN, N. Y. Co-ordinator of School Constr., 49 Flatbush Ave. exten. Brooklyn 1, N. Y. Bids Nov. 14. CD 10/22.

▲ **Emerson Manor Estates**, c/o John M. Gabriel, 37 Hudson St., Hackensack, N. J., Owner Builds. **$2,500,000.** 200 HOUSES on 70-acre tract on Kinderkamack Rd., EMERSON, N. J.

Midland Knolls Home, c/o John M. Gabriel, 37 Hudson St., Hackensack, N. J. Owner Builds. **$600,000.** 60 HOUSES on tract near Midland Ave. and Route 17, PARAMUS, N. J.

Stanford C. Seiple, Sunbury, Pa., LB. **$424,079,** general constr. Pennsylvania Firemen's TRAINING SCHOOL, LEWISTON, PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids Nov. 12. CD 10/15.

M. L. Haldeman & Son, 103 W. Chocolate Ave., Hershey, Pa., LB. **$540,917,** general constr. HIGH SCHOOL for Greenwood Joint School Dist., MILLERSTOWN, PA. State Public School Bldg. Auth., 101 S. 25 St., Harrisburg, Pa. Bids Nov. 13. CD 10/29.

▲† **Baltimore Contractors, Inc.**, 711 S. Central Ave., Baltimore, Md. CA **$6,918,000.** permanent TROOP SPACES, excluding bakery, Eng. 18-020-53-12, FORT GEORGE C. MEADE, MD. U. S. Eng. 24 St. and Maryland Ave., Baltimore, Md. CD 10/14, under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

Miss., Heidelberg—B.A. 12/2—Town, WW imprvs. Biggs, Weir & Chandler, 336 Meadowbrook Rd., Jackson, engrs.

Miss., Lexington—B.A. 12/9—City, sanitary sewer imprvs. J. B. Williams & Co., Yazoo City, engrs. Bids 11/4 rejected. CD 10/30.

▲ **N. C., Charlotte**—TERMINAL—B.A. 12/12—City, City Hall, terminal at municipal airport. $1,350,000. Plans deposit $50. Bid date changed. Walter W. Hook & Assoc., 303½ W. 4 St., archts. CD 11/7.

BIDS ASKED—BUILDINGS

Ga., Columbus—SCHOOL—B.A. 12/8—Muscogee Co. Bd. Educ., Court House, Cusseta Road School, $350,000. Lorin D. Raines, 2443 Wynnton Rd. and Wilbur Talley, 1230 2 Ave., archts. CD 6/26/50.

Ga., Pelham—SCHOOL—B.A. 12/18—City, City Hall, elementary school, $400,000. Plans deposit $50.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

Hudson & Jenkins, Healey Bldg., Atlanta, archts. CD 2/26.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Gas Light Co. of Columbus, 107 13 St., Columbus, Ga., Owner Builds, **$200,000** natural gas lines in Edgewood Area, COLUMBUS, GA.

▲ † **T. H. Pearce & Co.**, Edgewood Circle, Columbus, Ga. CA **$1,923,677.** emergency type railhead, CAMP SHELBY, MISS. U. S. Eng., P. O. Box 1169, 2301 Grant St., Mobile 7, Ala. CD 10/28, under LB.

† **Patton-Tully Transportation Co.**, 1242 N. 2 St., Memphis, Tenn. CA. **$497,400.** 20,000 tons riprap upper bank paving, Presidents Island, CIVENG 40-041-53-54, TENNESSEE. U. S. Eng., P.O. Box 97, Memphis, Tenn. Bids Nov. 5. CD 10/8.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Batson-Cook Co.**, West Point, Ga., CA, **$6,670,000.** 7 WAREHOUSES, Marine Corps Supply Depot, ALBANY, GA. Dist. P. Wks. Office, U. S. Navy, Charleston, S. C. Bids Oct. 23. CD 10/28, under LB.

▲ **Alabama By-Products Corp.**, First National Bldg., Birmingham, Ala., Owner Builds, **$3,000,000** COAL TIPPLE and mining facilities, MAXINE, ALA. CD 11/11.

Weir-Mel Builders, Inc., 4502 Dale Mabry Highway, Tampa, Fla. Owner Builds. **$500,000.** 50 RESIDENCES, ST. PETERSBURG, FLA.

Silmar Realty Corp., 205 Grant Dr., Sarasota, Fla., Owner Builds, **$350,000** APARTMENT UNITS, SARASOTA, FLA.

Fort & White, First Federal Savings & Loan Bldg., Jackson, Miss. Owner Builds. Est. **$400,000.** 30 RESIDENCES, JACKSON, MISS.

▲ **Lovering Constr. Co.**, 616 Guardian Bldg., Minneapolis, Minn. CA. Est. **$6,000,000.** rein.-con. WAREHOUSE and PACKAGING PLANT, LOUISVILLE, KY. General Mills, Inc., General Mills Bldg., 200 Second Ave. S., Minneapolis, Minn. CD 11/12.

Whittenberg Constr. Co., 2214 S. Floyd St., Louisville, Ky. CA Est. **$750,000.** mfg. PLANT, SOMERSET, KY. Clopay Corp., c/o contractor.

H. E. Collins Contg. Co., 1809 Broad St., Chattanooga, Tenn., CA. Approx. **$450,000.** WAREHOUSE, CHATTANOOGA, TENN. G. W. Bagwell Preserving Co., E. 31 St., Chattanooga, Tenn.

Asa Ambrister, Empire Bldg., Knoxville, Tenn., Owner Builds. **$400,000.** 52 RESIDENCES, KNOXVILLE, TENN.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲ **O., Columbus**—B. A. 12/4—City, City Hall, Hoover Dam for storage reservoir. $8,000,000. CD /22.

BIDS ASKED—BUILDINGS

▲ **Ill., Vandalia** — HOSPITAL — B.A. 12/3 — Fayette County Hospital District, Vandalia, 3 story, brick concrete hospital, $1,500,000. Pace Associates, 53 W. Jackson Blvd., Chicago, Zone 4, archts. CD 8/12.

▲ **O., Marion**—HOSPITAL—B.A. 12/23—City, City Hall, 4 story, 155-bed, brick, steel, concrete Marion General Hospital. $2,900,000. Dan A. Carmichael, Jr., 5 E. Long St., Columbus, archt. CD 11/11.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Meadowbrook, Inc., (G. J. Goudreau & Co.)**, 5216 Knollwood Dr., Cleveland, O., Own Forces. $34,000,000. regional SHOPPING CENTER to incl. 80 stores, 2,000 single and multiple dwelling units, between Warrensville Center and Northfield Rds., BEDFORD, O. George Voinovich, 1010 Euclid Bldg., Cleveland, O. archt. Frank Kabbes, c/o owner, Ch. engr. CD 5/1.

George A. Rutherford Co., 2725 Prospect Ave., Cleveland, O., CA Approx. **$500,000.** 1 story, 156x165 ft. brick, steel FACTORY for mfg. cord for tires, CLEVELAND, O. Industrial Rayon Corp., Union Commerce Bldg., Cleveland, O. Awarded Nov. 1. CD 9/30.

▲ **W. W. Oeflein, Inc.**, 5345 N. Hopkins St., Milwaukee, 9, Wis., CA, **$2,500,000,** 1 story, 270x604 ft. concrete, steel, brick blocks FACTORY, MILWAUKEE, WIS. Kearney & Trecker Corp., 6484 W. National Ave. Milwaukee, 14, Wis. CD 11/12.

WEST OF MISSISSIPPI

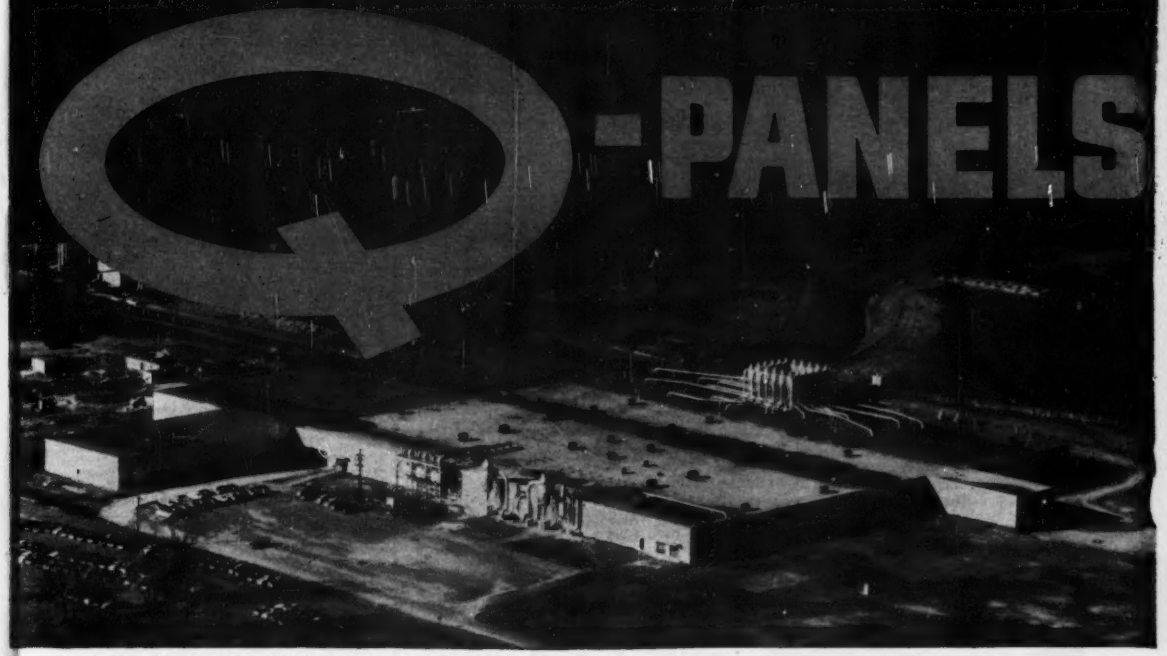
BIDS ASKED—HEAVY CONSTRUCTION

† **Texas**—B.A. 12/3—U. S. Eng., 100 W. Vickery St., Fort Worth, Hickory Creek Bridge, Missouri-Kansas-Texas R. R. relocation, Garza-Little Elm Dam and

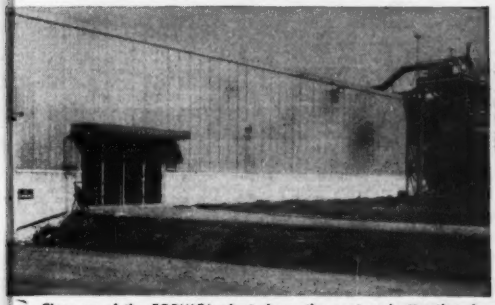
(Continued on page 60)

HOW TO ANTICIPATE PLANT EXPANSION

Q-PANELS



Air view of the FORMICA COMPANY'S building. Walls of Q-Panel were detached, moved forward and used again on the addition. A Q-Panel wall has the quality of a permanent wall but with the additional advantage of being removable to provide for plant expansion.



Close-up of the FORMICA plant shows the neat and attractive design formed by continuous Q-Panel fluted texture. Architects have achieved a great variety of design by combining Q-Panels with other materials for decorative effect.

From left to right—Mr. D. J. O'Conor, President of the FORMICA COMPANY, Mr. A. M. Kinney, President of A. M. Kinney, Inc., which designed the FORMICA plant and Mr. George H. Clark, Vice President in charge of engineering of the FORMICA COMPANY.

The FORMICA COMPANY built its new Cincinnati plant with Q-Panel walls, later removed the Q-Panels from two sides and re-used them on the addition. Note, in the air view, the older section has a lighter colored roof than the newer section.

ROBERTSON Q-PANELS can be taken down as easily as they can be erected—which is about nine minutes for a fifty-square-foot unit by a crew of only four men. Q-Panels provide you a good-looking wall, with erection and maintenance features that solve the peculiar construction problems which have arisen in the last ten years.

Q-Panels lend themselves to a great variety of designs. They are available in several fluted patterns. They require no maintenance, arrive at the site ready for erection either as a factory-assembled panel or a field-assembled panel. Do you have the details in your file?

Q-PANEL FACTS

MATERIALS—Metallic-coated Steel, Galbestos, stainless steel, aluminum on one or both sides.

SIZE—2'0" standard width. Lengths up to 25'0", depending on material used.

WEIGHT—Varies with metals selected but averages 4½ lbs. per square foot.

INSULATION VALUE—Superior to 12" of masonry with furred plaster. U-Factor—.14 B.T.U. in aluminum—.18 B.T.U. in steel.

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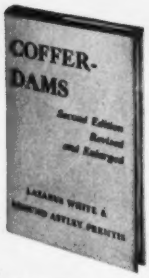

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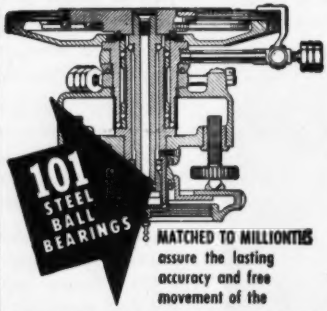

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(Continued from page 58)

Reservoir, Elm Fork of Trinity River, Inv. No. CIVENG 41-443-53-11. Extended date. CD 10/17.

BIDS ASKED—BUILDINGS

Tex., Mercedes—GARAGE, etc.—B.A. 12/14—Magic Valley Electric Co-operative, Inc., Mercedes, garage, warehouse, parts, $250,000. Wm C. Baxter, Pioneer Bldg., Weslaco, archt. CD 9/16.

Tex., Victoria—SCHOOL—B.A. 12/23—Victoria Independent] School Dist., Victoria, Crestwood Elementary School. $365,000. Extended date. Arne G. Engberg, 3810 Fannin St., Houston, archt. Walter P. Moore, 4605 Montrose St., and Howard & Johnson, Scanlan Bldg., both Houston, engrs. CD 10/31.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† Peter Kiewit Sons Co., 1024 Omaha Natl. Bank Bldg., Omaha, Neb., LB $1,254,411, aircraft parking apron maintenance docks, Rapid City Air Force Base. Inv. 25-066-53-61, RAPID CITY, S. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Nov. 13. CD 10/15.

▲ † Dondlinger & Sons Constr. Co., P. O. Box 2033, Wichita, Kan. CA Schedule I $2,987,973. Schedule II $301,323. Schedule III $54,620, total $3,343,916. 2 maintenance hangars, washrack, heating plant, steam distr. sys., sprinkler sys., underground utilities, reservoir, pumping station, electric sep., drainage, pavements, roads, Wichita Air Force Base, Eng. 23-028-53-18, WICHITA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Oct. 15. Awarded Oct. 20. CD 10/28 under LB.

▲ † Metropolitan Paving Co., 300 S. Indiana St., Oklahoma City 4, Okla., LB $2,857,000, est. $3,000,000 airport runways, Altus Air Force Base, CIVENG 34-066-53-21, ALTUS, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla., Bids Nov. 13. CD 10/21.

Cummins Const. Co., Enid, Okla., CA $902,460, est. $905,000. outfall sewer and sewage disposal plant, ENID, OKLA. City, City Hall, Enid, Okla. Bids Oct. 27, awarded Nov. 6. CD 10/31.

▲ † Condon-Cunningham Co., 4229 Lafayette St., Omaha, Neb., CA. $2,380,988, exten. runways at Carswell Air Force Base, ENG 42-443-53-16, FORT WORTH, TEX. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bids Nov. 6. CD 11/11, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Dallas Power & Light Co., Dallas Power & Light Bldg., Dallas, Tex., Purchase and Hire. $8,900,000. 60,000 kw. turbine electric GENERATING PLANT unit, DALLAS, TEX. CD 5/23.

Home Owned Properties, Inc., 1306 Texas St., Houston, Tex., Owner Builds. $300,000. 30 DWELLINGS, HOUSTON, TEX. CD 11/7.

Phillips Petroleum Co., Judkins, Tex., Purchases, Day Labor. Approx. $650,000. some natural gasoline production PLANT improvs., JUDKINS, TEX. CD 8/25.

Maco Constr. Co., 7917 Preston Rd., Dallas, Tex. Owner Builds. $310,000. Job. No. 3, 40 DWELLINGS, near Daingerfield, LONE STAR, TEX. CD 10/14.

Barrett Constr. Co., S. Flores St., San Antonio, Tex., CA $308,150, 40 DWELLINGS, SAN ANTONIO, TEX. George W. DeJavan, Sr., Alamo Natl. Bldg., San Antonio, Tex. CD 10/8.

FAR WEST

BIDS ASKED—BUILDINGS

▲ Ariz., Phoenix—INDUSTRIAL—Bids Asked—Reynolds Metals Co., Reynolds Metals Bldg., Richmond, 19, Va., (selected list bidders) 462,000 sq. ft. aluminum extrusion bldg. $21,000,000. CD 6/12.

BUILDINGS

LOW BIDS AND CONTRACTS

Massart Plumbing & Heating Co., 652 Eliot Ave. W., Seattle, Wash., LB. $642,948, mechanical work for Harborview County HOSPITAL addn., SEATTLE, WASH. King Co., County-City Bldg., Seattle, Zone 4, Wash. Bids Nov. 3. CD 10/20.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† Kuney-Johnson Co., 235 9th Ave. N., Seattle, Wash. CA. $2,515,223, est. $2,467,456, four 3 story, 37x220 ft. rein.-con. airmen's dormitories, one 1 story 14,000 sq. ft. masonry mess and admin. bldg. and outside utilities, Eielson Air Force Base, ENG 95-596-53-48, ALASKA. U. S. Eng., 3013 Arcade Bldg., Seattle 1, Wash. Bids Oct. 3. CD 10/8, under LB.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

▲ Que., Val d'Or—BUILDINGS—B.A. 12/2—Defence Constr. Ltd., 1274 Guy St., Montreal, 12 buildings, R.C.A.F. Station, Job 2283 Approx. $2,000,000. Plans deposit $100. M. P. McAndrew, c/o owner, engr.

BIDS ASKED—BUILDINGS

▲ Ont., Toronto—OFFICE—B.A. 12/2—Bell Telephone Co. of Canada, 76 Adelaide St. W., 7 story bldg., 2 wings, 153x158 ft., rein.-con., stone. 157,000 sq.

ft. building, University Ave. at Armory St. $1,000,000, Mathers & Haldenby, 15 St. Mary St., archts. CD 10/3.

▲ **Ont., Toronto**—OFFICE—B.A. 12/9—Crown Life Insurance Co., Yonge and Colborne Sts., 9 story, 270,350 sq. ft., bsmnt., sub-bsmnt., 2 penthouse floors, steel, stone office, Bloor E. and Church Sts. $2,000,000. Marani & Morris, 1250 Bay St., archts. CD 4/6/51.

B. C., Prince George—POST OFFICE—B.A. 12/10—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. 3 story post office, Quebec St. and 5 Ave. $300,000. Plans deposit $200. E. A. Gardner, c/o owner, ch. archt. L. S. Wells, 1110 W. Georgia St., Vancouver, dist. archt. C. B. K. Van Norman, 540 Seymour St., Vancouver, archt. CD 11/21/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Borger Bros. Ltd., 2004 14 A St. E., Calgary, Alta., CA, $224,491, WW and sewerage systems R.C.A.F. housing, PENHOLD, ALTA. Defence Constr. Ltd., Winnipeg, Man. Awarded Nov. 1.

▲ **Dawson & Hall Ltd.,** 775 Clark Dr., Vancouver, B. C., CA, $3,912,431 cantilever hangar and workshops R.C.A.F. COMOX, B. C. Defence Constr. Ltd., 360 Homer St., Vancouver, B. C. Bids Oct. 5, awarded Nov. 4. CD 9/18.

Pearce Constr. Co., Hagersville, Ont., CA, $265,376, est. $376,000. sewage disposal plant and 10 mi. sewers, STRATHROY, ONT. City Council, City Hall, Strathroy, Ont. Bids Nov. 10, awarded Nov. 12. CD 10/30.

BUILDINGS

LOW BIDS AND CONTRACTS

Stephens Constr., Ltd., 199 Townsend St., Sydney, NS., CA, $374,000, concrete, steel, brick, Central-Stagnes SCHOOL, NEW WATERFORD, N.S. Municipality, New Waterford, N. S. Bids Nov. 6. CD 10/20.

Engineered Buildings, Ltd., of Saskatchewan, 2136 Queen St., Regina, Sask., Owner Builds, $500,000 prefabrication PLANT in two sections, first section 40x160 ft., 2 story, frame, and main plant at back. Angus St. and 5 Ave., REGINA, SASK.

LATIN AMERICA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Brown & Root,** 4100 Clinton Dr., Houston, Tex., U. S. A. CA Approx. $21,000,000. drainage, land reclamation and flood control in Artibonite Proj., incl. Peligre Dam 60 meters high, HAITI. Govt. of Haiti, Port au Prince, Haiti. Raoul St. Lo, Bd. of Admin., Organism de Development de la Valle de L' Artbonite, staff engr. • Knappen-Tippetts-Abbett-McCarthy, 62 W. 47 St., New York, N. Y. engrs. on cost estimates and preliminary planning. CD 5/18/50.

Proposed Projects

WATER SUPPLY

▲ **Ala., Dothan**—City, WW imprvs. $1,214,840. Ewin Eng. Co., Box 461, Mobile, consult. engr.

▲ **Kan., Wichita**—City, c/o C. C. Ellis, clk., voted $9,770,300 bonds Nov. 4, imprvs., expansion city water supply. CD 10/1.

▲ **N. C., Greensboro**—City, City Hall, bond election Dec. 16, WW imprvs. $1,400,000. CD 10/28.

O., Campbell—City, City Hall, defeated $670,000 bonds Nov. 4. WW plant. CD 5/22.

Utah, Salt Lake City—Salt Lake City Corp., Irma Bitner, recdr., City and County Bldg., water treatment plant in City Creek Canyon, $900,000. Clyde C. Kennedy Co., 604 Mission St., San Francisco, Calif., consult. engr. Roy McLeese, c/o owner, city engr.

SEWERS, WASTE DISPOSAL

▲ **Fla., Coral Gables**—City, City Hall, sewage disposal plant, $2,500,000. CD 11/9/44.

▲ **Fla., Key West**—City, City Hall, sanitary sewerage imprvs. $2,200,000. Gilbert W. Clifford & Assocs., 101 Westward Ave., Miami Springs, Fla., consult. engrs.

▲ **Kan., Wichita**—City, c/o C. C. Ellis, clk., voted $1,506,230 bonds Nov. 4, expansion sewage disposal plant. CD 10/1.

▲ **Mo., St. Louis**—City, c/o Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, 12 and Market Sts., rehabilitation of River des Peres sewerage sys., incl. changes in 2 pumping stations near confluence of River Des Peres and Mississippi Rivers and other south of Manchester Ave. to pump foul water into Mill Creek sewer west of Kings highway, $2,525,000, Horner & Shifrin, Shell Bldg., 1221 Locust St., Zone 1, consult. engrs. CD 9/18/51.

▲ **O., Ashtabula**—City, voted $1,200,000 bonds Nov. 4, sewage plant. CD 9/3.

▲ **O., Avon Lake**—Village, Avon Lake, voted bonds Nov. 4, storm sewers, misc. streets. $1,265,000.

O., Campbell—City, City Hall, defeated $800,000 bonds Nov. 4, sewage disposal plant, collector sewers. CD 5/22.

▲ **O., Euclid**—voted bonds Nov. 4, sewers, $1,000,000. CD 9/11.

▲ **O., Tiffin**—City, voted $950,000 bonds Nov. 4, sewage disposal sys. $2,500,000. CD 10/24.

▲ **Ore., Portland**—City, City Hall, voted bonds, sewage project completion, 4 pumping stations, west side interceptors and connectors. $2,500,000. L. G. Apperson, c/o owner, city engr. CD 7/20/45.

▲ **R. I., Providence**—City, City Hall, voted bonds Nov. 4, modernizing Fields Point Sewage Plant. $3,500,000. CD 9/29; sewers, $300,000. CD 11/17/50.

▲ **Tenn., Paris**—City, City Hall, voted bonds Nov. 4, sanitary sewer imprvs. $1,000,000. CD 9/16.

▲ **B. C., Vancouver**—Vancouver & Districts Joint Sewerage & Drainage Bd., 500 Beatty St., 8 treatment plants for lagooning chlorination system at Iona Island and Lion's Gate Bridge, 15,000 ft. tunnel from Dunbar St. to Iona Island. $10,000,000. T. V. Berry, c/o owner, chm. and ch. engr.

BRIDGES

▲ **Ind., Fort Wayne**—Bd. P. Wks., City Hall, approved $8,000,000, grade crossing elimination program, incl. crossings at Fairfield Ave., Harrison, Calhoun, Clinton, Lafayette, Columbia and Clay Sts. City, New York, Chicago and St. Louis R.R., Terminal Tower, Cleveland, O., Allen County and State of Indiana will share costs. CD 10/10/45, under Unclassified.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Metropolitan Dist. Comn., Parks Div., 20 Somerset St., Boston,

Cambridge—underpass Soldier's Field Rd. at Lars Anderson Bridge, $1,000,000.

STREETS AND ROADS

▲ **Ark., Little Rock**—City, City Hall, voted bonds. constr. expressway incl. riverfront dr. ramps at two bridges etc. $1,000,000. CD 3/24/49.

▲ **Neb., Omaha**—City, City Hall, 18 and Farnam Sts., voted bonds Nov. 4, resurfacing streets. $4,500,000. E. W. Woodbridge, city engr. CD 9/16.

▲ **NEW JERSEY**—New Jersey Highway Auth., 1035 Parkway Ave., Trenton, Zone 1,

Middlesex Co.—constructing section Garden State Park incl. bridges and underpasses near Route 35 Interchange, north of Raritan River $4,000,000.

Monmouth Co.—grading north of Matawan, $2,000,000. Frederic R. Harris, Inc., 27 William St., New York, N. Y., consult. engr.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol, Oklahoma City,

Cleveland Co.—widen 12 mi. U.S. 77 from Noble to Lexington, $447,000;

Garvin Co.—grade, drainage 12 mi. Hy. 29, east of Wynnewood, $430,000;

roadbed 12 mi. Hy. 76 west of Lindsay, $430,000;

Logan Co.—widen 16 mi. U.S. 77, south of Guthrie, $130,000;

Murray Co.—paving 1 mi. State Hy. 7, in Sulphur, $150,000;

widen 10 mi. U.S. 77, $1,000,000. G. H. Bittle, c/o owner, engr.

Tex., El Campo—City, street paving, asph. and concrete $675,000; concrete curbs and gutters, $75,000. Freese, Nichols & Turner, 2111 C&I Life Bldg., Houston, consult. engrs. CD 11/27/50.

EARTHWORK, WATERWAYS

▲† **California**—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver, Colo., constr. Sly Park Dam on Sly Park Creek, Eldorado Co., 12 air line miles east of Placerville, incl. earth-fill dam; earth-fill dike, outlet works, incl. intake structure, gate chamber, control house, 3 types of conduit, uncontrolled spillway, addnl. work incl. reservoir clearing and road construction. Prospective bidders invited to inspect site in immediate future in order that they may be informed and in position to submit a bid when work is advertised. CD 8/12.

▲† **Kentucky**—U. S. Eng., 830 W. Broadway, Louisville, Zone 1, local protection project, Court, Kennedy and 19 Sts., 5 pumping plants, with concrete substructures, 4 plants with brick superstructures, 1 plant with concrete superstructure, complete with sub-stations, pumping equipment, appurtenances, Ohio and Licking Rivers, Covington, Kenton Co. $1,000,000.

AIRPORTS

▲† **Ala., Selma**—ELECTRONICS MAINTENANCE, etc.—U. S. Eng., P. O. Box 1169, Mobile, Zone 7, plans by Platt Roberts & Co., Merchants National Bank Bldg., Mobile, electronics maintenance bldg., maintenance hangar warehouse at Craig Air Force Base, $2,500,000. CD 7/18/51.

▲ **Neb., Omaha**—AIRORT—City, City Hall, 18 and Farnam Sts., defeated bonds Nov. 4, airport constr. and imprvs. $1,685,000. E. W. Woodbridge, city engr. CD 9/12.

▲ **Wash., Seattle**—HEADQUARTERS—Port of Seattle, Bell St. Terminal, Zone 1, plane overhaul headquarters for Northwest Airlines at Seattle-Tacoma Airport, $8,000,000. G. T. Treadwell, ch. engr.

LATIN AMERICA

▲ **Mexico**—Srla. de Comunicaciones y Obras Publicas (Communications & P. Wks. Ministry) Mexico City,

Imperial

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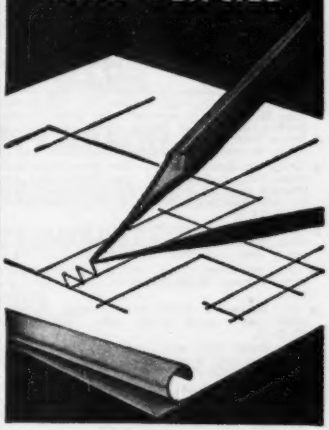

• Imperial Pencil Tracing Cloth has the same superbly uniform cloth foundation and transparency as the world famous Imperial Tracing Cloth. But it is distinguished by its special dull drawing surface, on which hard pencils can be used, giving clean, sharp, opaque, non-smudging lines.

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plans 80 mi. super highway, Mexico City-Puebla City, $10,000,000; 40 mi. super highway, Mexico City-Toluca, $5,000,000; 30 mi. super highway Tijuana-Ensenada, $6,000,000. CD 10/31/50.

AMERICANS ABROAD

▲ Iraq-France—GAS PIPE LINE—Bechtel International Corp., 220 Bush St., San Francisco, Calif., U. S. A., plans gas pipe line from Kirkuk, Iraq to Paris, France, 2,500 mi., via Instanbul and Trieste. Subject to financial and political obstacles. $775,000,000.

PUBLIC BUILDINGS

▲ Ala., Mobile—SCHOOL IMPRVS.—Mobile Co. Bd. Educ., Court House, voted bonds, school imprvs. $1,500,000. CD 2/12/51.

▲ Calif., Anaheim—SCHOOL—Anaheim School Dist., Anaheim, voted $2,500,000 bonds, two Junior High Schools.

▲ Calif., Oxnard—SCHOOLS—Oxnard Elementary School Dist., Oxnard, voted $500,000 bonds, schools, $1,000,000. CD 10/4/50.

▲ Calif., Richmond—OFFICE—Contra Costa Co. Hall of Records, Martinez, voted $1,350,000 bonds, county office bldg. CD 9/30.

▲ Calif., San Francisco—FIRE HOUSES—City and San Francisco Co., City Hall, voted $4,750,000 bonds fire houses. CD 9/16.

▲ Calif., San Leandro—SCHOOLS, etc.—San Leandro Unified School Dist., 451 Hepburn St., San Leandro plans by Schmidts & Hardman, 1320 University Ave. Berkeley, Junior High School, elementary school in Merced Tract, Wilison School and Garfield, Jefferson School, Roosevelt School addns. $3,000,000.

▲ Calif., San Mateo—SCHOOL—San Mateo Union High School Dist., T. F. Reynolds, supt. Bellevue Ave. and Delaware St., plans by John Lyon Reid, 1069 Market St., San Francisco, steel frame school, $3,000,000. CD 10/29/51.

▲ Calif., San Mateo—HOSPITAL—San Mateo Co. Court House, Redwood City, voted $2,300,000 bonds, expansion of community hospital. CD 8/20.

▲ Calif., San Rafael—CIVIC CENTER—Marrin Co. Court House, defeated $3,500,000 bonds, civic center. CD 10/2.

▲ Fla., Jacksonville—POWER PLANTS—City, City Hall, voted bonds, power plants addns. $18,000,000. CD 9/10.

▲ Fla., Miami—CITY HALL—City, City Hall, plans by Robert Law Reed & Assoc., dupont Bldg., Miami, City Hall, $4,000,000. CD 8/29/46.

Fla., Tallahassee—DORMITORY—Florida A & M College, Tallahassee, plans by Guy C. Fulton, Peabody Hall, University of Florida, Gainesville, dormitory $938,000. CD 3/17/49, under LB.

▲ Ill., Chicago—MAINTENANCE SHOPS—Chicago Transit Authority, Merchandise Mart, Zone 54, two 1 story, part bsmnt., maintenance shops, $1,600,000. Battey & Childs, 231 S. La Salle St., Zone 4, consult. engrs.

▲ Ia., Mason City—SCHOOL—Bd. Educ., voted $1,200,000 bonds, schools. CD 9/15.

▲† Ky., Fort Knox—ARTILLERY SHOP—U. S. Eng., 830 W. Broadway, Louisville, plans by Warren Van Praag, Decatur, Ill., steel, frame, 69,286 sq. ft. artillery shop and heavy tank shop with 4 overhead cranes, utilities, grading, paving, $1,000,000. CD 9/28/51.

▲ Ky., Louisville—ADULT EDUCATION—City, City Hall, voted $4,000,000 bonds, adult education bldg., addnl. bldgs. at University of Louisville.

▲ Ky., Louisville—HOSPITAL—City, 303 E. Chestnut St., voted $4,000,000 bonds general hospital addns., imprvs. CD 10/28.

▲ Ky., Louisville—POLICE HEADQUARTERS—City, City Hall, voted $2,000,000 bonds Nov. 4, police headquarters, W. S. Arrasmith & Assoc., Lincoln Bank Bldg., archts. CD 10/28.

▲ Ky., Louisville—SCHOOLS—Jefferson Co., Bd. Educ., W. Jefferson St., raise in school tax approved by voters Nov. 4 will finance 6 Junior High Schools, 3 elementary schools, school addns., $13,500,000, Fred Hartstein, McDowell Bldg., archt. E. R. Ronald & Assoc., 554 S. Third St., consult. engrs.

▲ La., Crowley—SCHOOL IMPRVS.—Acadia Parish School Bd., $1,000,000 bond election Dec. 19, school imprvs. in Crowley and Church Point School Dists. CD 1/21/48.

▲ La., Marion—HOUSING—Marion Housing Auth. plans by Bonner & Carroll, Triad Bldg., Baton Rouge, 180 housing units, $1,000,000.

▲ La., Westlake—HOUSING—Westlake Housing Auth., plans by Bonner & Carroll, Triad Bldg., Baton Rouge, 300 housing units, $1,750,000.

Mass., Burlington—SCHOOL—Town, Albert E. Wilde, chn. Bldg. Comn.-supt. Schools, plans by Edgar T. P. Walker, 131 State St., Boston, elementary school, Winn St., $800,000. CD 5/16.

Mich., Adrian—SCHOOLS—Bd. Educ., voted $989,000 bonds Nov. 4, two grade schools, McKinley School Addn. CD 10/30.

▲ Mich., Ann Arbor—LABORATORY—University of Michigan, Bd. Regents, Harlan Hatcher, pres., Ann Arbor, plans by Cornelius L. T. Gabler & Assoc., 924 Hammond Bldg., Detroit, 3 story, brick, steel, concrete atomic research Dr. Henry J. Gomberg Laboratory, Vander Graff generator, North Campus near Cooley Engineering Laboratory, $1,000,000.

▲ Mich., Detroit—FIRE STATIONS—City of Detroit, Bd. Fire Comrs., Wayne and Larned Sts., fire stations at Plymouth and Hubbell; E. Seven Mile Rd. and Hayes St.; and W. Seven Mile Rd. and Robson St.; moving station from Grand River Rd. and Manor Rd. to Schoolcraft and Roselawn Rds., rehabilitation of present fire alarm sys. $2,500,000, George R. Thompson, city engr.

▲ Mich., Detroit—HOUSING—Detroit Housing Comn., 409 Griswold St., plans by Smith-Hinchman & Grylls, 800 Marquette Bldg., Edward Jeffries Housing, brick multiple apartment houses, Area 3, $2,000,000. CD 1/10/45.

▲† Minn., Minneapolis—HOSPITAL—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C., plans by Magney, Tusler & Setter, 202 Foshay Tower, alternations, imprvs. in 7 existing bldgs. at Veterans Hospital, Fort Snelling, $2,000,000.

▲ N. C., Greensboro—AUDITORIUM—City, City Hall, bond election Dec. 16, War Memorial Auditorium, $1,150,000. CD 10/30/46.

▲ O., Avon Lake—SCHOOL—Bd. Educ.—Avon Lake, voted bonds Nov. 4, Fairview School addn., and high school addn. $1,425,000.

▲ O., Bellefontaine—SCHOOLS—Bd. Educ., Bellefontaine, defeated $1,274,000 bonds Nov. 4, two new grade schools. CD 10/2.

O., Bellevue—SCHOOL—Bd. Educ., Bellevue, voted $947,000 bonds Nov. 4, school expansion. CD 9/24.

▲ O., Columbus—MEMORIAL—Bd. Trustees, Veterans Memorial, c/o Comrs. Franklin Co., Court House, Franklin County Veterans Memorial Bldg. north of W. Broad St. between Scioto River and N.Y.C. R.R. $3,300,000.

▲ O., Cuyahoga Falls—SCHOOLS—Bd. Educ., Albert Gracia, pres., Cuyahoga Falls, voted $2,330,000 bonds Nov. 4, Junior High School, Portage Trail and 13th, grade school on East Side. CD 5/29.

▲ O., Dayton—COURT HOUSE—Comrs. Montgomery Co. Court House, defeated $6,600,000 bonds Nov. 4, court house and juvenile center. CD 7/23.

▲ O., Toledo—SCHOOL—Bd. Educ., Oregon Twp. School Dist., R5, voted $2,081,500 bonds Nov. 4, high school at Seaman and Stadium Rd. Bellman, Gillett & Richards, 518 Jefferson St., archts. CD 10/8.

▲ O., Van Wert—HOSPITAL—Comrs. Van Wert Co., Court House, defeated $1,400,000 bonds Nov. 4, Van Wert County Hospital. CD 3/14.

Okla., Anadarko—COURT HOUSE—Caddo Co., Anadarko, defeated bonds Nov. 4, county court house. $900,000. CD 9/16.

▲ Pa., Harrisburg — PRISON — Comrs. Dauphin Co., Court House, voted $1,300,000 bonds Nov. 4, county prison. CD 4/8/48.

▲ Pa., Lansdale—HIGH SCHOOL—North Penn Joint School Bd., Lansdale, plans by Howell Lewis Shay, Packard Bldg., Phila., Senior High School addn. $1,000,000. Junior High School, $2,000,000.

Pa., Sharon Hill—SCHOOL—Darby Twp. School Dist., 1404 Hook Rd., Sharon Hill and Penn. State Public School Bldg. Auth., Harrisburg, plans by Horace W. Castor, 117 S. 17 St., Phila., elementary school. $590,000.

R. I., Providence—PARKING GARAGE, etc.—City, City Hall, voted $800,000 bonds Nov. 4, central parking garage and warehouse. CD 1/31/52.

▲ S. C., Camden—HOSPITAL—Kershaw Co., Kershaw, voted bonds, hospital. $2,000,000. CD 2/26, under S. C., Kershaw.

▲ Tenn., Nashville—HIGH SCHOOL—Davidson Co. Bd. Educ., Court House, rebuild Hillsboro High School. $1,500,000.

▲ Tex., Austin — UNIVERSITY BUILDINGS, etc. — University of Texas, c/o Bd. Regents, Administration Bldg., central office bldg., $2,100,000; classroom bldg. (English), $950,000; library addn., $2,500,000; business admin. bldg., $2,250,000; continuation center-union bldg. expansion $2,000,000; engineering expansion $3,500,000; economic geology bldg. extens. $700,000; Naval-Army-Air ROTC bldg. $1,500,000; Social Sciences Bldg. $950,000; auditorium, $3,500,000; remodeling existing buildings, $250,000; fine arts bldg. $950,000; nursery school, $50,000; expansion of utilities distr. sys. $650,000; imprv. existing utility facilities, $250,000; const. sidewalks, $60,000; replacing bridges over Waller Creek at 21st, 23rd and 24th Sts., $200,000; expansion of utilities generating and distr. sys., $1,500,000; radio-TV bldg., $500,000; constr. parking facilities, $100,000. CD 8/16/44.

▲ Tex., Beaumont — HOUSING — Beaumont Housing Auth., Beaumont, plans by Stone & Pitts, 1872 Calder Ave., 26 two-story, 150 housing units. $1,132,500. CD 1/6/50.

Va., Bedford—HOSPITAL—Bedford Memorial Hospital, Bedford, hospital. $903,000.

▲ Va., Lynchburg—HOSPITAL—Lynchburg Hospital Auth., City Hall, hospital. $3,500,000. CD 8/8/50.

Wash., Everett—COURT HOUSE—Snohomish Co., Court House, defeated bonds, 4 story, bsmnt., court house annex, $850,000. Decker & Christensen, 1411 4 Ave. Bldg., Seattle, archts. CD 10/24.

▲ Wash., Renton—SCHOOL—School Dist. 403, Renton, voted bonds, Junior High School. $1,000,000. Mallis & De Hart, Lyon Bldg., Seattle, Zone 4, archts. CD 9/22.

▲ Wash., Spokane—AUDITORIUM—City, City Hall, voted bonds, municipal auditorium. $1,500,000. CD 8/11.

▲ Wash., Tacoma—COUNTY-CITY—Pierce Co., County Court House, and City, City Hall, voted bonds county-city building. $6,000,000. CD 9/18.

▲ Que., St. Johns—MILITARY COLLEGE—Defence Constr. Ltd., 1247 Guy St., Montreal, Royal Military College gymnasium with swimming pool and auditorium, 2 academic buildings. $1,500,000. M. P. McAndrew, c/o owner, engr. National Defence, c/o owner, "C" Building, Ottawa, Ont., engr.

COMMERCIAL BUILDINGS

▲ Calif., Garden Grove—HOUSES—Thomas Companies, Inc., 2486 Huntington Dr., San Marino, 178 frame stucco houses between Trask and Garden Grove Ave. west of Wright St., $1,744,400. Wm. A. Bray, 5670 Wilshire Blvd., Los Angeles, consult. engr.

Calif., Los Angeles—DWELLINGS—Barclay Development Co., 474 N. Hawthorne Blvd., Hawthorne, plans by Drafting Service, 633 W. 3 St., Los Angeles, 112 frame, stucco dwellings, 220 St. and Vermont Ave. $800,000.

▲ Ill., Chicago—STUDENT UNION—Illinois Institute of Technology, 3300 S. Federal St., plans by Ludwig Mies Vander Rohe, 230 E. Ohio St., Zone 11, student union bldg., $1,000,000 laboratory, $500,000. CD 5/29.

▲ Ill., Chicago — HOSPITAL — Northwestern University, 607 Clark St., plans by Holabird & Root & Burgee, 180 N. Wabash St., Zone 1, 10 story hospital on downtown campus. $10,000,000.

▲ Ill., Deerfield—HOMES—Robert Bartlett Bldg. Corp., 111 W. Washington St., Chicago, Zone 2, brick homes. $11,000,000.

▲ Ill., St. Charles—CHAPEL, etc.—First Methodist Church of St. Charles, 4 and Main Sts., plans by Gray, Laz & Mall, 909 S. Batavia St., Geneva, chapel and church. $1,000,000.

▲ La., Baton Rouge—OFFICE—Third & Laurel Realty Corp., 114 Third St., plans by Bodman & Murrell, 1175 Nicholson Dr., office, $1,750,000.

▲ Mo., St. Louis—HOSPITAL—Lutheran Hospital, c/o Lutheran Charities Assoc. of St. Louis, 2637 Miami St., Zone 18, plans by Frost, Maack & Becker, 705 Olive St., Zone 1, and James H. Ritchie & Assoc., consult. hospital archts., 38 Newberry St., Boston, Mass., 5 and 6 story, stone, rein.-con., masonry X-shaped hospital addn., Miami St. between Ohio and Texas Aves. $3,500,000. Milligan & Miglas, 411 N. 7 St., St. Louis, Zone 1, structural engrs. Harry F. Wilson, 4908 Delmar Blvd., Zone 8, mech. engr. CD 10/9/51.

▲ N. Y., New York—OFFICE—Irving Maidman, 1501 Broadway, Zone 36, plans by Staab & Staab, 331 Madison Ave., Zone 17, 12 story office, 305 W. 42 St. $5,000,000. CD 11/6.

▲ Okla., Oklahoma City—HOSPITAL, etc.—Baptist General Conventions, 1141 N. Robinson St., plans by Noftsger & Lawrence, 2756 N.W. 23 St., 500-bed hospital and school of nurses. $3,000,000.

▲ Pa., Elkins Park—APARTMENT—7900 York Road Corp., c/o Pincus & Pechter, 1325 Walnut St., Phila. apartment. $3,000,000.

▲ Tex., Dallas—OFFICE—Insurance Co. of Texas, 3306 Main St., plans by Mackie & Kamrath, 2713 Ferndale St., Houston, 5 story office. $1,000,000. Walter P. Moore, 2 Pinedale St., and Raymond L. Jenkins, 4316 Blossome St., both Houston, Tex., consult. engrs. CD 10/29.

▲ Va., Roanoke—HOSPITAL—Burrell Memorial Hospital, 611 McDowell Ave. N. W., hospital addn. $1,700,000.

▲ Ont., Ottawa—HOTEL—Syndicate, c/o W. Hamilton, 22 Spruce St., hotel on site of present Norlite Bldg., on Wellington St. $1,000,000.

▲ Ont., Toronto—HOUSING—Keystone Realtors, H. F. Fishleigh, 372 Bay St., housing development in Knob Hill area, on 40-acre site in Scarborough Twp. Plan start next March on 100 apartment bldgs. with 1,000 apartment units and 2,000 houses. $50,000,000.

INDUSTRIAL BUILDINGS

▲ Ala., Maxine—COAL TIPPLE, etc.—Alabama By-Products Corp., Maxine, coal tipple and mining facilities $3,000,000.

▲ Calif., Anderson—PLANT—Shasta Plywood, Inc., Anderson wood panels mfg. plant, $1,566,000.

▲ Calif., Mount Eden—DISTRIBUTING HOUSE, etc.—Western Electric, 315 Montgomery St., San Francisco and Pacific Telephone & Telegraph Co., 140 New Montgomery St., San Francisco, 390,000 sq. ft. distributing house and transportation center, William St. and Doolittle Dr., Eden Twp. $4,700,000.

Ill., Chicago—WAREHOUSE, etc.—Continental Distributing Co., 514 W. Erie St., Zone 10 plans by A. Epstein & Sons Co., 2011 Pershing Rd., Zone 9, 125,000 sq. ft. warehouse and office, 700 W. Chicago Ave., $875,000.

▲ Ind., Madison—GENERATING PLANT—Indiana-Kentucky Electric Co., 30 Church St., New York 8, N. Y., 1,200,000 kw. electric generating plant. $280,000,000. Sargent & Lundy, 140 S. Dearborn St., Chicago Ill., consult. engrs. CD 10/30.

▲ N. Y., Babylon—INDUSTRIAL TERMINAL—Syndicate, J. F. Mittelman, pres., 90-04 161 St., Jamaica, Industrial Terminal Development, on 200-acre tract near Deer Park Airport. $2,000,000.

▲ N. Y., Copiague—INDUSTRIAL TERMINAL—Sunrise Industrial Terminal, Inc., 52-25 Barnett Ave., Long Island City, Industrial Terminal, comprising 40 one-story bldgs. on tract bounded by W. Hoffman Ave., Wartbury Ave., Marconi Blvd., to be known as Sunrise Industrial Terminal, $4,000,000.

▲ **O., Campbell**—OVEN BY-PRODUCTS COKE BATTERY—Youngstown Sheet & Tube Co., Stambaugh Bldg., Youngstown, 76-oven by-products coke battery at Campbell Works on new site. **$10,000,000.**

▲ **O., Gallipolis**—GENERATING STATION—Ohio Valley Elec. Corp., 30 Church St., New York 8, N. Y. 1 million kw generating station, near here. **$120,000,000.** American Gas & Electric Service Corp., 30 Church St., New York 8, N. Y., consult. engrs. CD 8/22, under Ohio.

▲ **O., Toledo**—GENERATING PLANT—Toledo Edison Co., Edison Bldg., steam electric generating plant at Bay Shore, between Dupont and Wynn Rd., Oregon Twp., Lucas Co. with turbine to produce 135,000 kw; one boiler, one condenser and one transformer. **$25,000,000.** George W. Saathoff, 60 Wall St., New York, N. Y., consult. engr. CD 10/9.

▲ **Tex., Orange**—PLANT—Goodrich Gulf Chemicals, Inc., Orange (Parent Owners, B. F. Goodrich Co., 500 S. Main St., Akron, O. and Gulf Oil Corp., Port Arthur, Tex.). petrol chemical plant, 701-acre tract. **$15,000,000.**

▲ **Va., Falls Church** — PLANT — **Melpar, Inc., 452** Swann Ave., Alexandria, plans by Perry M. Duncan, 121 E. 54 St., New York, N. Y., plant. **$2,000,000.**

▲ **Va., Glasgow**—PLANT—James Lees & Son, Glasgow, rug mfg. plant. Construction expected to go ahead within a few weeks. **$1,500,000.** United Engineers & Constructors, Inc., 1401 Arch St., Phila., Pa., consult. engr.

▲ **Puerto Rico, San Juan**—REFINERY—Cosden Petroleum Corp., Big Spring, refinery, near here, **$6,500,000.**

UNCLASSIFIED

▲ **Ala., Mobile**—BERTHS—Alabama Bureau Docks & Terminals, Docks & Terminals Bldg., 5 berths to docks, **$1,000,000.** CD 4/13/50.

▲ **Calif., Long Beach**—PIER—Long Beach Harbor Dpt., 1333 El Embarkadero rehabilitate Pier 1, transit shed, turntable, **$1,336,640.** George F. Nicholson, 122 W. 5 St., Long Beach, consult. engr. CD 12/6/44.

▲ **Mass., Boston**—SHIP TERMINAL—Commonwealth of Mass., Port of Boston Auth., East Boston, ship terminal, Commonwealth Pier 1, East Boston. **$9,500,000,** Fay, Spofford & Thorndike, 11 Beacon St., Boston, consult. engrs. CD 12/30/47, under Massachusetts.

O., Cleveland—TELEVISION STATION—WGAR Broadcasting Co., Hotel Statler, television station, **$811,000.** Robert A. Fox, c/o owner, engr.

▲ **Oklahoma**—RURAL DISTRIBUTION LINES—Western Farmers Electric Co-operative, Anadarko, 73 mi. 69kv transmission line, sub-station facilities and sys. imprvs., Comanche Co. **$1,367,000.** CD 2/13/50.

▲ **Pa., Phila.**—PIER—Dpt. Procurement, City Hall Annex, Pier 38 and 40 alterations, **$2,385,000.** CD 10/25/44.

▲ **Pa., Pittsburgh**—TELEVISION STATION—Pittsburgh Radio Supply House, 411 Seventh Ave., plans by Harry Viehman, 411 Seventh Ave., television station, tower, control station, **$1,170,000.** CD 8/28.

▲† **S. C., Charleston**—BUILDINGS—P. Wks. Office, Dpt. Navy, Box 365, plans by The McPherson Co., P.O. Box 2366, Greenville, electronic shops and battery overhaul shop addn. at Naval Shipyard. **$5,000,000.** CD 6/25.

▲ **Texas, Louisiana, Mississippi, Alabama, Tennessee, Kentucky, West Virginia, Pennsylvania**—GAS PIPE LINE—Texas-Ohio Gas Co., c/o J. R. McAuliffe, 1310 McKinney St., Houston, Tex. 1,500 mi. 30 in. welded joint natural gas pipe line from Texas coast, near Wharton to Pennsylvania near Scranton, **$170,000,000.** Federal Power Comn. refused license. Abandoned. CD 5/23/51.

▲ **Texas**—WATER FACILITIES—Sunray Oil Corp. & Associated Companies, 1st Natl Bldg., Tulsa, Okla. water injection facilities to recover some 400,000,000 bbl. oil, Kelly-Snider Field, **$1,500,000;** gas injection facilities to recover some 350,000,000 bbl. oil. Diamond Field, **$1,100,000.**

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

STREETS AND ROADS

December 2 Massachusetts

BUILDINGS

LOW BIDS AND CONTRACTS

Wilcox & Huse, Dorset St., South Burlington, Vt. Owner Builds. Approx. **$550,000.** 50 HOUSES, Dorset St., SOUTH BURLINGTON, VT. Hoag & Assoc., Inc., 370 Shelburne St., Burlington, Vt., archt.

Granger Constr. Co., Inc., 306 Main St., Worcester, Mass. CA Approx. **$450,000.** CHURCH, ALDENVILLE, MASS. St. Rose of Lima Parish, Aldenville, Mass. Bids Nov. 6. CD 10/24.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

December 9 New Jersey December 15 New York

STREETS AND ROADS

December 4 New York December 19 Pennsylvania

N. Y., Jamaica—PLAYGROUND—B.A. 12/8—Bd. Educ., Bureau of Constr., 49 Flatbush Ave. ext., Brooklyn, Zone 1, playground at athletic field for Jamaica High School, 84 Ave. and 168 St. $157,000. Plans deposit $10. CD 7/24/44.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Robert E. Lamb**, 3429 W. Indiana Ave., Phila., Pa. LB **$594,750.** XC11 catapult and facilities, paving, Naval Air Material Center and Mustin Field, NOY 75506, Spec. 36324, PHILA., PA. Dpt. Navy, Phila. Naval Base, Phila., Pa. CD 1/12/51.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore,

Wright Constr. Co., Box 1537, Columbus, Ga. LB **$602,-577** stone, LB **$602,447** slag, grading, drainage, surf. $.505 mi. Annapolis By-pass and 2 permanent ramp structures, Contr. AA 263-14-515, Anne Arundel Co. Bids Nov. 12. CD 10/21.

▲ **Charles H. Tompkins Co.**, 907 16 St. N.W., CA, **$1,458,372,** sludge disposal plant structures and equipment, Sewage Treatment Plant, Unit 17, WASH., D. C. Dist. of Columbia, Director of Sanitary Engrg., District Bldg., Wash., D. C. Bids Sept. 25. CD 9/29, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Post Homes**, c/o A. H. Salkowitz, archt., 37-60 82nd St., Jackson Heights, N. Y. Owner Builds. **$2,000,000.** 90 HOUSES, 232 St. off Horace Harding Blvd., BAYSIDE, N. Y.

▲ **Rheinstein Constr. Co., Inc.**, 21 E. 40 St., New York 16, N. Y. CA. Approx. **$1,000,000.** 2 HOSPITAL bldgs. at site, GLEN OAKS, N. Y. Hillside Hospital, 75-59 263 St., Bellerose Manor, N. Y. Louis A. Abramson, 25 W. 45 St., New York 19, N. Y., archt.

▲ **Syndicate**, c/o William P. Hahn, 163-18 Jamaica Ave., Jamaica, N. Y. Owner Builds. **$25,000,000.** 6 story APARTMENTS and SHOPPING CENTER on tract on north side of Northern Blvd. between 69 and 75 Sts., JACKSON HEIGHTS, N. Y.

▲ **Bar Harbour Homes**, c/o Matern & York, archts., 90-04 161 St., Jamaica, N. Y. Owner Builds. **$14,000,000.** 700 HOMES on 220-acre site, Merrick Rd., MASSAPEQUA PARK, N. Y.

▲ **Isaac Degenaars Co.**, 231 Greenwood Ave., Wortendyke, N. J., CA. **$1,125,673,** Junior-Senior HIGH SCHOOL, NEW CITY, N. Y. Clarkstown Central School Dist. 1, New City, Congerds Rd., New City, N. Y. Bids Sept. 29. CD 10/7, under LB.

▲ **Bianco & Pepe**, 7 S. Third Ave., Mt. Vernon, N. Y. CA **$1,000,000.** FACTORY on 3-acre site at Beechwood and Second Sts., NEW ROCHELLE, N. Y. Gries Reproducer Corp., 780 E. 133 St., New York 54, N. Y.

Planet Constr. Co., 11 W. 42 St., New York 18, N. Y. LB **$692,000,** general constr., P. S. 162 SCHOOL, 53 Ave. between 201 and 202 Sts., Queens Boro, OAKLAND, N. Y. Co-ordinator of School Constr., 49 Flatbush Ave., exten., Brooklyn 1, N. Y. Bids Nov. 12. CD 10/20.

Village Green Homes, c/o Alwin Cassens, Jr., archt., 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. **$850,000.** 80 HOUSES on 18-acre tract at Old County Rd. and Iris Pl., WESTBURY, N. Y.

▲ **F. D. Rich Co., Inc.**, 101 Park Ave., New York 17, N. Y. LB **$1,681,900.** 34 buildings, 250 units of DWELLINGS, ADMIN. BLDG. etc. of low-rent housing Proj. PA 3-2, SCRANTON, PA. Scranton Housing Auth., at Valley View Terrace, Scranton, Pa. Bids Nov. 12. CD 10/16.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

December 5 Kentucky, Tennessee December 19 Alabama

STREETS AND ROADS

December 5 Kentucky, Tennessee December 19 Alabama

▲ **Ala., Prichard**—B.A. 12/16—City, City Hall, sewage disposal plant. $1,000,000.

BIDS ASKED—BUILDINGS

Tenn., Chattanooga—OFFICE, etc.—B.A. 12/7—State Hy. Dpt., Nashville, district office and garage. $600,-000. CD 10/13.

S. C., Inman, Jonesville and Landrum—HOUSING—B.A. 12/10—State Regional Housing Auth. No. 1, Laurens, 80 housing units. $750,000. John J. Harte Co., 284 Techwood Dr. N. W., Atlanta, Ga., archt. CD 4/1.

S. C., McCormick and Johnston—HOUSING—B.A. 12/10—State Regional Housing Auth. 1, Laurens, 62 housing units. $550,000. John J. Harte Co., 284 Techwood Dr. N. W., Atlanta, Ga., archt.

S. C., Edgefield and Belton—HOUSING—B.A. 12/11—State Regional Housing Auth. 1, Laurens, S. C. 75 housing units. $750,000. John J. Harte Co., 284 Techwood Dr., Atlanta, Ga., archt.

Ga., Savannah—SCHOOL—B.A. 12/15—Chatham Co. Bd. Educ., Court House, Woodville Negro School $450,000. Oscar F. Hansen, 15 W. Liberty St., archt. CD 1/2/51.

Ga., Hazelhurst—HOUSING—B.A. 12/16—Hazelhurst Housing Auth., Hazelhurst, 65-unit housing Projects GA-137-1 and GA-137-2. $600,000. Plans deposit $50. Extended date. CD 11/19.

Tenn., Nashville—HOUSING—B.A. 12/16 — Nashville Housing Auth., 701 N. 6 St., Tenn. 5-0, 100 units housing. $800,000. Extended date. CD 11/11.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **G. E. Bass & Co.**, P. O. Box 1033, Jackson, Miss. CA **$769,978.** addnl. bldgs. connecting utilities off street parking, Keesler Air Force Base, Inv. 53-10, BILOXI, MISS. U. S. Eng., P. O. Box 1169, 2301 Grant St., Mobile 7, Ala. CD 11/18.

† **Sam Carline & Assoc.**, Berwick, La. LB **$560,527.** Tiger Island floodwall, St. Mary Parish, Inv. 53-65, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans, La. Bids Nov. 14. CD 10/28.

▲ **T. L. James Co., Inc.**, Box 531, Ruston, La. LB **$2,-157,449.** concrete trestle over West Atchafalaya Floodway in St. Landry Parish, KROTZ SPRINGS, LA. New Orleans, Texas & Mexico Ry., c/o F. S. Schwinn, asst. ch. engr., 204 Union Station, Houston, Tex. (Correction-cost). CD 11/12, under LB.

† **Southern Builders**, P. O. Box 1815, Shreveport, La. CA **$582,401.** technical bldg. Barksdale Air Force Base, Inv. 53-27, SHREVEPORT, LA. U. S. Eng., 300 Broadway, Little Rock, Ark. Van Os & Flaxman, Ward Bldg., Shreveport, La., archts.-engrs. Bids Nov. 13. CD 10/10.

T. E. Moore Co., Box 1069, Greenwood, S. C., LB **$791,517,** WW imprvs., COLUMBIA, TENN. City, Columbia, Tenn. Bids Nov. 12. CD 10/13.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Thorington Constr. Co., Inc.**, 2106 N. Hamilton St., Richmond, Va., CA **$1,499,884,** 1 and 2 story, brick, concrete, masonry Norfolk County HIGH SCHOOL, NORFOLK, VA. Norfolk Co. School Bd., 148 Granby St., Norfolk, Va. Bids Nov. 14. CD 11/5.

McDevitt & Street Co., Builders Bldg., Charlotte, N. C. CA. **$750,000.** department STORE, CHARLOTTE, N. C. W. T. Grant Co., 109 N. Tryon St., Charlotte, N. C. Bids Nov. 6. CD 10/16.

A. C. Samford, Inc., Albany, Ga., CA, **$894,367.** 140 HOUSING UNITS, ALBANY, GA. Albany Housing Auth., Albany, Ga. Bids Nov. 14. CD 10/28.

▲† **S. J. Curry & Co.**, Albany, Ga., CA, **$654,700.** ADMINISTRATION bldg. exten. at Marine Corps Supply Depot, NOY 75267. ALBANY, GA. Dist. P. Wks. Office, Dpt. Navy, Box 365, Naval Base, S. C. Bids Nov. 13. CD 10/22.

Louie Shell, Buford, Ga., Owner Builds, **$500,000,** 50 RESIDENCES, ATLANTA, GA.

Delta Constr. Co. & Paul H. Keasling, Waycross, Ga., CA, **$524,093,** Junior High SCHOOL, BRUNSWICK, GA. Glynn Co. Bd. Educ., Brunswick, Ga. Bids Nov. 5. CD 11/11, under LB.

Marco Corp., Realty Bldg., Savannah, Ga., Owner Builds, **$400,000,** 50 RESIDENCES, SAVANNAH, GA.

Arthur Northern, 559 Heineman St., Daytona Beach, Fla., Owner Builds, **$400,000,** 40 RESIDENCES, DAYTONA BEACH, FLA.

Fairbanks-Morse Co., 760 Lee St. S. W., Atlanta, Ga., CA, **$441,600,** furnishing, installing 2 diesel generators at Municipal POWER PLANT, KISSIMMEE, FLA. City, City Hall, Kissimmee, Fla.

Washington Street Homes, c/o F. Earl De Loe, archt. 1916 N. Orange Ave., Orlando, Fla., Owner Builds, **$400,000** 50 RESIDENCES, ORLANDO, FLA.

Glenn Christian & Co., 3500 Kensinton Ave., Tampa, Fla., Owner Builds, **$500,000,** 60 RESIDENCES, TAMPA, FLA.

G. E. Bass & Co., P.O. Box 1033, Jackson, Miss. CA. **$992,033.** 134 HOUSING units, BOSSIER CITY, LA. Bossier City Housing Auth., Bossier City, La. Bids Nov. 12. CD 10/13.

Lionel F. Favret Co., 937 Gravier St., New Orleans, La. CA **$687,786.** remodel OFFICE, NEW ORLEANS, LA. Gulf Refining Co., Maison Blanche Bldg., New Orleans, La. CD 10/21, under LB.

▲† **James E. Green**, Johnson City, Tenn., CA **$1,153,000.** PLANT ADMIN. BLDG. for Dpt. Navy, BRISTOL, TENN. Sperry-Farragut Corp., Bristol, Tenn. Bids Nov. 4. CD 11/11 under LB.

▲† **Westinghouse Electric Corp.**, Union Bank Bldg., Pittsburgh, Pa., LB **$9,331,234,** auxiliary COMPRESSOR and drive sys. to evacuate air from propulsion wind tunnel at Arnold Engineering Development Center, TULLAHOMA, TENN. U. S. Eng., Tullahoma, Tenn. CD 11/14/49.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Ind., Indianapolis—SCHOOL—B.A. 12/3—Bd. School Comrs., M. V. Bailey, bus. dir., 150 N. Meridian St., Zone 4, 1 and 2 story, brick, Howe High School addn., 4900 Julian Ave. $800,000. Plans deposit $30. John M. Rotz Eng. Co., Merchants Bank Bldg., Zone 4, mech. engr. McGuire & Shook, 1400-01 Fletcher Trust Bldg., Zone 4, archts. CD 4/15.

O., Cincinnati—SCHOOL—B.A. 12/18—Bd. Educ., 216 E. 9 St., Losantiville Elementary School, Elbrook Ave. $658,000. Plans deposit $25. Frankenberger, Junker & Lemley, 2910 Woodburn Ave., archts.-engrs. CD 5/23.

SOON LETS CONTRACT—BUILDINGS

▲ **Ill., St. Charles**—CHURCH, etc.—First Methodist Church of St. Charles, 4 and Main Sts., soon lets contract church and chapel, $1,000,000. Gary Laz & Mall, 909 S. Batavia St., Geneva, archts. CD 11/13.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—State Hy. Dpt., State Office bldg., Columbus, **The Baker & Hickey Co.**, P.O. Box 5008—Tri-Village Station, Columbus, O., LB **$1,649,240,** est. $1,593,-000. Type T-50 on B-71 and structures 0.711 mi. SR 46-(3.35)-3.65), SR 169 (2.14-2.74), U-UG-635 (4), U-1098 (1), City of Niles, Proj. No. 323, Trumbull Co.

received no bids Nov. 14, Type T-35, 0.597 mi. CR 63, USR 50B-11.70, (Access road to Atomic Energy Plant), AA-3, AA-AS-2, Hamilton Co.; Type T-35 0.568 mi. USR 23-2.60, AA-4, Pike Co. Bids Nov. 14. CD 10/31.

▲ **INDIANA and ILLINOIS**—Indiana Toll Bridge Comm., Wm. Koch, chn., Citizens Bank Bldg., Evansville 17, Ind.,

Bates & Rogers Constr. Co., 600 W. Jackson Blvd., Chicago, Ill., LB, **$1,698,670** sub-structure;

Mt. Vernon Bridge Co., Mt. Vernon, O. and **J. F. Beasley Co.**, 28 N. Wacker Dr., Chicago, Ill., LB **$2,648,277** superstructure for Wabash River Memorial Bridge over Wabash River from Indiana to Illinois. CD 11/6.

▲ **ILLINOIS**—State Div. Hys., Springfield.

Bituminous Fuel & Oil Co., 304 Illinois Ave., East St. Louis, Ill., LB, **$146,577,** bit. 4.75 mi. F.A.S. 943, Alexander Co.; LB, **$132,919,** bit. 3.74 mi. F.A.S. 942, Pulaski Co.;

S. J. Groves & Sons Co., 1104 W. Reynolds St., Springfield, Ill., LB, **$1,619,625,** c. conc. base course wid'n., 0.52 mi., bit. resurf. and c. conc. 8.89 mi. Ill. 146, Hardin Co.; LB, **$467,997,** bit. resurf. 21.74 mi. Ill. 37, Williamson and Johnson Counties;

Mitchell Constr. Co., 216 E. Madison St., Herrin, Ill., LB, **$444,657,** c. conc. base course, bit. resurf. c. conc. base course wid'n. 2.69 mi., bridge reconstr. Ill. 148 and 149, Franklin Co.; LB, **$164,738,** c. conc. base course wid'n. 1.93 mi. c. conc. bit. resurf. 1.93 mi. Ill. 149, Williamson Co.;

Sankey Bros., Inc., 402 Illinois Bldg., Springfield, Ill. LB, **$186,938,** bit. resurf. 8.29 mi. U.S. 36, Scott Co.; LB, **$87,996,** bit. resurf. 1.95 mi. U.S. 36, 54 and 67 Jacksonville, Morgan Co.;

E. T. Simonds Constr. Co., Inc., 202 W. Willow St., Carbondale, Ill., LB, **$418,763,** c. conc. base course, c. conc. base course wid'n. 7.47 mi. Ill. 14, Hamilton Co.; LB, **$352,786,** c. conc. base course, c. conc. base course wid'n., 14.15 mi. Ill. 14, Franklin and Hamilton Counties;

Arrow Petroleum Co., 7419 Franklin St., Forest Park, Ill., LB, **$329,315,** bit. resurf. 14.63 mi. Ill. 14, Franklin and Hamilton Counties;

J. C. Bremer, Hillsboro, Ill., LB, **$138,843,** b. conc. base course, c. conc. base course wid'n., 2.32 mi. Ill. 4, Macoupin Co.;

H. H. Gunther Constr. Co., 600 E. Main St., Galesburg, Ill., LB, **$60,809,** intermittent c. conc. patch and bit. resurf. Ill. 78, Peoria and Stark Counties;

Joyce Bros. Constr. Co., 715 Myers Bldg., Springfield, Ill., LB, **$854,032,** c. conc. base course, c. conc. base course wid'n., 8.29 mi. 2 bridges, U.S. 36, Scott Co.;

McCann & Co., Inc., 532 Reisch Bldg., Springfield, Ill., LB, **$77,577,** bit. 4.23 mi. F.A.S. 713, Shelby Co.;

E. A. Meyer Constr. Co., 1539 Morrow Ave., North Chicago, Ill., LB, **$499,578,** vertical sand drain installation, channel change, embankment, pit run gravel, 0.47 mi. U.S. 14, Lake Co.;

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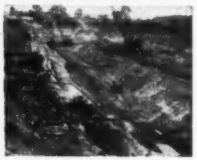

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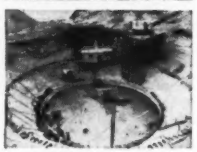
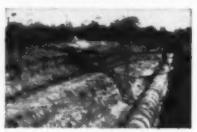


BUILDINGS

SEWERAGE



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Chas. O'Brien & Sons, 2171/2 Liberty St., Morris, Ill., LB, $89,859, grav. or crushed run base course 2.58 mi. F.A.S. 276, Kendall Co.;
Standard Paving Co., 30 N. La Salle St., Chicago, 2, Ill., LB, $68,082, c. conc. 3.75 mi. U.S. 40, Clark Co.;
Thompson Asphalt Co., 6 and McCambridge Sts., Madison, Ill., LB, $180,770, bit. resurf. 7.49 mi. Ill. 14, Hamilton Co.;
Triangle Constr. Co., 480 N. Evergreen Ave., Kankakee, Ill., LB, $993,636, c. conc. base course wid'n., c. conc. base course, c. conc. pavement 21.07 mi. Ill. 37, Williamson and Johnson Counties;
Vermillion Constr. Co., 914 E. Main St., Streator, Ill., LB, $354,963, c. conc. paving, 1 bridge 1.05 mi. Ill. 23, La Salle Co.;
J. P. Wetherly Constr. Co., 1016 W. Superior St., Ottawa, Ill., LB, $132,889, bit. surf. 8.47 mi. F.A.S. 334, Ford and Iroquois Counties. Bids Nov. 13. CD 10/30.

▲ **MICHIGAN**—State Hy. Dpt., 222 Townsend St., Lansing, Zone 13.
Pierson Contg. Co., 609 Eddy Bldg., Saginaw, Mich. LB, $778,690. c. conc. partial grading, drainage 7.623 mi. new US-12 relocation, F1 39-40 C4, Kalamazoo Co.;
Cooke Contg. Co., 1116 Penobscot Bldg., Detroit, Mich. LB, $476,952. 24 ft. wide c. conc. 3.424 mi. US-24, F 63-21 C17, F 82-17 C3, Oakland and Wayne Counties;
Sugden & Sivier, Inc., Hazel Park, Mich. LB, $180,808. 23 ft. wide aggregate surf. 4.4 mi. M-61, M 6-16 C2, M 9-19 C3, Bay Co.;
MacLean Constr. Co., 706 Sheridan St., Lansing, Mich. LB, $276,307. stabilized aggregate surf. 8.693 mi. US-31, M 5-16 C6, Antrim Co.;
P. Vander Veen & Sons, 2020 Newark St., Grand Rapids, Mich. LB, $215,566. 46 ft. wide c. conc. with curb and gutter 1.315 mi. from Dixon Ave. N.E., M 15-12 C3, Charlevoix Co.;
Hicks Co. & Ayres Asphalt Paving Co., Adrian, Mich. LB, $104,024. aggregate surf. 2.854 mi M-121, bit. surf. 0.799 mi. M-121, M 46-47 C4, M 30-35 C5, Lenawee and Hillsdale Counties. Bids Nov. 12. CD 11/5 and 10/30.

BUILDINGS

LOW BIDS AND CONTRACTS

Allen Paul, 1050 Addice Way, Cincinnati, O., Owner Builds, $910,000. 70 one-family 1 and 1½ story brick, frame DWELLINGS, Eustis Court off Galbraith Rd., west of Plainfield, CINCINNATI, O. Nunlist & Frolicher, Trac. Bldg., Cincinnati, O., engrs. Awarded Nov. 15.
Charles Hiatt, R. R. 4, Greenwood, Ind., Owner Builds, $400,000, 40 HOMES, along State Road 135, GREENWOOD, IND.
Indianapolis Homes, Inc., 1300 N. Irvington Ave., Indianapolis, Ind., Owner Builds, $750,000, HOMES in new tract at Layman Ave. and 16 St., INDIANAPOLIS, IND.
▲ **Kessler Homes, Inc.,** Speedway, Ind., Owner Builds, $5,505,000, 367 HOMES on new tract, 21 St. and Lyndhurst Dr., SPEEDWAY, IND.
▲ **E. H. Marhoefer & Co.,** 505 N. La Salle St., Chicago, 10, Ill., LB, $1,299,717, HOME for Aged, three treatment bldgs., WESTVILLE, IND. Bd. P. Wks., Indiana State, State House, Indianapolis, 4, Ind. Bids Oct. 30. CD 10/8.
Dahl Olson, Inc., 5555 N. Wolcott St., Chicago, Ill., LB, $431,415, 2 story, bsmnt. Chappel Grade SCHOOL, 5145 N. Leavitt St., CHICAGO, ILL. Bd. Educ., 228 N. La Salle St., Chicago, 1, Ill. Bids Nov. 7.
EnJay Constr. Co., 105 W. Madison St., Chicago, 2, Ill., CA, $500,000, FACTORY, CHICAGO, ILL. Quam-Nichols Co., 526 E. 33 Pl., Chicago, Ill. CD 10/6.
Wm. C. Kuhlman Co., 732 N. Cicero St., Chicago, Ill., CA, $400,000, SCHOOL and CHURCH, DES PLAINES, ILL. St. Stephen Catholic Church, Des Plaines, Ill. Bids Nov. 7, awarded Nov. 12. CD 11/6.
E. H. Marhoefer Co., 505 N. La Salle St., Chicago, 10, Ill., LB, $568,000, 1 story, bsmnt., rein.-con. face brick, 120x220 ft., WAREHOUSE and OFFICE, LINCOLNWOOD, ILL. Chicago Musical Instrument Co., 30 E. Adams St., Chicago, Ill. Bids Nov. 12. CD 11/5.
▲ **Coath & Goss,** 5103 W. Lake St., Chicago, 51, Ill., CA, $1,533,071, 2 story, bsmnt., face and common brick, limestone Argo Community High SCHOOL, SUMMIT, ILL. School Dist. 217, Summit, Ill. Bids Oct. 22, awarded Nov. 13. CD 10/29, under LB.
Parkview Investment Co., 14142 Riverview St., Detroit, Mich. Owner Builds. $600,000. one 24 family APARTMENT units, two 16 family APARTMENT units, four 8 family APARTMENT units, all 2 story, brick bldgs., DETROIT, MICH.
Green Brothers, 19436 James Couzens Dr., Detroit, Mich. CA. Est. $600,000. 50 brick ranch HOMES, Schoolcraft and Telegraph Rds., REDFORD, MICH. Detroit Mortgage & Realty Co., 332 W. Fort St., Detroit, Mich.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
BRIDGES
December 2 Iowa December 5 Minnesota
STREETS AND ROADS
December 2 Iowa December 5 Minnesota

Nebraska—RURAL DISTRIBUTION LINES—B.A. 12/11—KBR Rural Public Power Dist., Ainsworth, 244.8 mi. rural distr. lines, Brown, Rock, Cherry, Keya, Paha, Loup and Holt Counties. $425,000. Raymond H. Reed & Co., Columbus, engrs. CD 10/20.
† **Oklahoma**—B.A. 12/11—U. S. Eng., Box 61, Tulsa Zone 2, North Canadian River Channel from Foundry Ave. to Spencer, Oklahoma Co. $750,000. CD 10/23.

BIDS ASKED—BUILDINGS

Tex., Rankin—SCHOOL—B.A. 12/4—Independent School Dist., c/o Hamilton Still, supt., Rankin, 1 story, brick, tile, concrete high school, auditorium and shops, elementary school addn. $500,000. Plans deposit $15. Wilson & Patterson, 202 Majestic Bldg., Fort Worth, archts.
Tex., Kingsville—HOUSING—B.A. 12/23—Kingsville Housing Auth., Kingsville, 92-low-cost housing units. $739,000 Boese & Harkrider, Texas & Pacific Bldg., Fort Worth, engrs. CD 11/20/51.
▲ **Tex., Galveston**—WAREHOUSE, etc.—B.A. 1/2—Galveston Wharves, 2325 Strand St., warehouse across from 37 St. pier, $1,500,000; machine and garage shop, $200,000; cotton storage warehouse, on portion 275,000 sq. ft. tract, $1,000,000. CD 8/20.
▲ **Tex., Freeport**—PLANT, etc.—Bids Asked—Dow Chemical Co., Freeport, ethylene dibromide plant, $6,675,000; addnl. electric power facilities, $10,675,000. CD 7/18 and 9/1.

SOON LETS CONTRACT—BUILDINGS

Tex. Houston—STORE—Battelsteins, Inc., 812 Main St., soon lets contract, store, S. Shepherd Dr. $600,000. Extended date. Brown & Root, Inc., Box 3, engr.-archt. CD 10/27.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Tobin & Barcus Constr. Co.,** 1430 State Ave., Kansas City, Kan. CA $965,325, est. $1,117,361. restore toe and bank protection Central Industrial Dist., Kansas City Flood Control Proj., CIVENG 23-028-53-79, MISSOURI. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Oct. 28, awarded Nov. 5. CD 11/5, under LB.
▲† **Clarkson Constr. Co.,** 26 and Jefferson Sts., Kansas City, Mo. CA $1,560,046, est. $1,675,078. concrete runways, taxiways, aprons, Grandview Air Force Base, Eng. 23-028-53-21, GRANDVIEW, MO. U. S. Eng., 601 Davidson Bldg. Kansas City 8, Mo. Bids Nov. 12, awarded Nov. 14. CD 11/10 under LB.
▲ **City,** Joe Cravens, mayor, Sikeston, Mo. rejected bids Oct. 20, sanitary sewer line extens., involving 120,350 ft. 8- to 30-in. sewers, 10,905 ft. 4- to 12-in. pressure main, 6 lift stations, appurtenances, LB $793,459; sewage treatment plant, appurtenances, LB $396,000, SIKESTON, MO. CD 10/27 under LB.
▲ † **James Leck Co.,** 211 S. 11 St., Minneapolis, Minn., LB $868,351, masonry constr.;
Joseph A. Bass Co., 322 Sexton Bldg., Minneapolis, Minn., LB $854,600, jacked up constr.;
Rorick Constr. Co., 905 S. 20 St., Omaha, Neb., LB $850,184, all steel constr. for WAF dormitories, mess and admin. bldg., at Offutt Air Force Base, Inv. 25-066-53-130, FORT CROOK, NEB. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Nov. 13. CD 10/24.
† **Anchor Constr. Co.,** Box 1467, Muskogee, Okla., CA $878,996. est. $875,000. roads and utilities Ardmore Air Force Base, Eng 34-066-53-24, ARDMORE, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Oct. 26, awarded Oct. 23. CD 10/28, under LB.
▲ **TEXAS**—State Hy. Comn., State Highway Bldg., Austin.
Bell, Braden, Barker & Gilvin, Inc., P. O. Box 2268, Amarillo, Tex., LB $133,719, grading, structures, base surf. 9.914 mi. Hy. FM 1755, 1932 and 1754, Proj. S 1 1697 (1) and S 1793 (1), Donley Co.;
Brown & Root, Inc., P. O. Box 3, Houston, Tex., LB $259,868, grading, storm sewers, atabil, base, aspn. surf., c. conc. pavement, illumination sys. and bridges 0.34 mi. Hy. U. S. 75, Proj. UI 32 (17), Harris Co.;
Harry Campbell, 2854 Berry St. Abilene, Tex., LB $146,802, grading, structures, base surf. 10.34 mi. Hy. FM 1217, Proj. R 556-6-2, Terrell Co.; LB $61,210, grading, structures base and surf. 8.131 mi. HY. FM 1773, Proj. R 1719-1-1, Menard Co.;
Collins Constr. Co. of Texas, P.O. Box 1192, Austin, Tex., LB $131,715. grading, structures, base and surf. 11.576 mi. Hy. FM 1674 and U. S. 290, Proj. S 1589 (1), Kimble Co.;
Ivan Dement, Inc., P.O. Box 1787, Amarillo, Tex., LB $88,186, grading structures 4.485 mi. Hy. SH 51, Proj. S 1510 (5), Oldham Co.;
J. R. Fanning, P.O. Box 1047, Lubbock, Tex., LB $250,948, grading, structures, base and surf. 16.105 mi. Hy. FM 94, Proj. R 704-5-1, R 704-4-1, R 704-3-1 and R 704-1-5, Motley, Cottle, Hall and Childress Counties;
Harrison Eng. & Constr. Corp., 4638 J. C. Nichols Parkway, Kansas City, Mo., LB $65,391, structures, c. conc. asph. 0.652 mi. SH 60, Proj. C 241-2 and 38 B and 4, Matagorda Co.;
Holland Page, P.O. Box 1181, Austin, Tex., LB $70,422. flexible base, asph. pavement 2.253 mi. Hy. SH 37 and U. S. 90, Proj. C 187-3-6 and C 271-2-6, Austin Co.;
The Jarbet Co., Box 5008, Beacon Hill Station, San Antonio, Tex., LB $545,647, hot mix b. conc. pavement 2.054 mi. Hy. Spur 247, Proj. C 17-11-2, Bexar Co.;
Long Bros., P.O. Box 180, McKinney, Tex., LB $134,558, grading, structures, base and surf. 11.112 mi. Hy. FM 407 and 435, Proj. S 1839 (1) and S 563 (2), Denton Co.;
Ernest Loyd, P.O. Box 1120, Fort Worth, Tex., LB $127,469, grading, structures, base, surf. 15.15 mi. Hy. FM 400 and 1585, Proj. C 1041-4-2, R 1041-3-1 and RV 1502-1-2, Lubbock and Lynn Counties; LB $70,560, grading, structures, base and surf.

13.251 mi. Hy. FM 1796, Proj. R 595-2-1, Medina Co.;

R. W. McKinney, P.O. Box 190, Nacogdoches, Tex., LB **$74,113,** grading, structures, base, surf. 3.15 mi. Hy. FM 1378, Proj. S 1732 (1), Collin Co.;

Hugh McMillan, P.O. Box 1227, El Paso, Tex., LB **$73,680,** grading, structures, base, surf. Hy. FM 1109 and 76, Proj. S 1330 (1) and S 1331 (1), El Paso Co.;

Moore Bros. Constr. Co., Lufkin, Tex., LB **$62,817,** flexible base, and asph. surf. tr. 4.938 mi. Hy. SH 7, Proj. S 1164 (2), Nacogdoches Co.;

J. W. Perry, 501 Insurance Bldg., San Antonio, Tex. LB **$148,454,** grading, structures, base, surf. 15.292 mi. HY. FM 475 and 1283, Proj. S 1702 (1) and S 1826 (1), Kendall and Bandera Counties;

South Texas Constr. Co., P.O. Box 3536, Corpus Christi, Tex., LB **$247,915,** flexible base shoulders, one course surf. tr. 11.432 mi. Hy. U. S. 59, Proj. C 89-8-27, Wharton Co.;

Henry Stafford & J. R. Fanning, P.O. Box 1047, Lubbock, Tex., LB **$94,565,** grading, structures, base, surf. 11.13 mi. Hy. FM 1698 and 213, Proj. S 1807 (1) and R 879-3-2, Terry Co.;

Worth Constr. Co., P.O. Box 351, Fort Worth, Tex., LB **$259,364,** grading, structures, pavement 1.091 mi. Hy. Convair Access Rd. Proj. RD-1, Cont. 2, Tarrant Co. Bids Nov. 14. CD 10/30, 11/3, 11/6.

TEXAS—State Hy. Comn., State Highway Bldg., Austin.

Gulf Bitulithic Co., P.O. Box 2572, Houston, Tex. and **F. M. Reeves & Sons,** P.O. 972, Austin, Tex. LB **$789,835,** 0.457 mi. Intracoastal Canal Bridge, Hy. FM 1460 Proj. RV 586-1-6, Brazoria Co.;

Thomas & Ratliff, Rogers, Tex., LB **$93,987,** widen culverts and bridges 0.141 mi., St. 85, Proj. C 301-1 and 2-21 and 10, Dimmitt Co.;

J. C. McLaughlin, 1305 E. 29 St., Bryan, Tex., LB **$65,764,** drainage structures and approaches 0.393 mi. Hy. St. 114, Proj. C 352-1 and 2-7 and 7, Wise Co. Bids Nov. 14. CD 10/22 and 10/30.

▲† **Edward E. Morgan, Jones & Gillis,** Box 4327 Fondren Station, Jackson, Miss., LB **$3,177,130,** est. $3,148,341, completion of embankment and constr. service bridge at Garza-Little Elm Dam and Reservoir, Neches River, CIVENG 42-443-53-16, **TEXAS.** U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. CD 10/20.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Fruin-Colnon Contg. Co.,** 1706 Olive St., St. Louis 3, Mo. CA Est. **$1,133,100.** 1 story, 320x375 ft., non-combustible type FACTORY and OFFICE, Valcour Ave. 1,000 ft. south of Heege Rd., AFFTON (ST. LOUIS 23 P. O.), MO. Union Bag & Paper Corp., Affton 23, Mo.

Learn Constr. Co., St. Joseph, Mo. LB **$417,871.** hospital addn., ST. JOSEPH, MO. Missouri Methodist Hospital, Dr. O. J. Carder, 8 and Faraon Sts., St. Joseph, Mo. Bids Nov. 6. CD 10/20.

Universal Constr. Co., Scarritt Bldg., Kansas City, Mo. CA **$952,956.** women's and men's DORMITORIES, WARRENSBURG, MO. Central Missouri State College, c/o Geo. W. Diemer, pres., Warrensburg, Mo. Bids Oct. 7, awarded Nov. 10. CD 10/17, under LB.

▲ **Frank Quinlan Constr. Co.,** 407 Liberty St., Kansas City, Mo. CA Est. **$1,000,000.** 150,000 sq. ft. WAREHOUSE, KANSAS CITY, KAN. James Stewart Co., Inc., Employers Casualty Bldg., Dallas, Tex. Sylvania Electric Products, Inc., c/o Willard L. Stiers, dist. mgr., 2109 Broadway, Kansas City, Mo., lessee.

L. F. Harper, Tribune Bldg., Great Bend, Kan. CA Est. $500,000. 50 DWELLINGS, TOPEKA, KAN. Davis-Welcome Agency, 111 W. 6 St., Topeka, Kan.

▲ **The Texas Co.,** 720 San Jacinto St., Houston, Tex., Purchases, Day Labor. **$1,285,000.** modernizing, expanding REFINERY, EL PASO, TEX. CD 5/1.

▲ **The Austin Co.,** M & M Bldg., Houston, Tex., CA. Approx. **$5,895,000.** Chemical PLANT, ORANGE, TEX. Solvey Process Div. of Allied Chemical & Dye Corp., Orange, Tex. CD 8/5.

▲ **N. G. Petry Constr. Co.,** 1114 W. 7 Ave., Denver, Colo., CA, **$1,000,000,** 2 story, 166x488 ft., WAREHOUSE and OFFICE, DENVER, COLO. Dixon & Co., 1700 E. 16 St., Denver, Colo. T. H. Buell & Co., 730 14 St., Denver, Colo., engrs. and archts. Awarded Nov. 4.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
STREETS AND ROADS
December 10 California

▲ **Calif., Los Angeles**—B.A. 12/5—Metropolitan Water Dist. of Sotuhern California, 306 W. 3 St., Los Angeles, 80.5 mi. 72 in. pipe, Garvey Reservoir to Southern Ave. middle feeder, Monterey Park-South Gate. $4,000,000. Plans deposit $5. CD 12/21/51.

▲† **Calif., Inyokern**—FACILITIES—B.A. 12/16—Dpt. Navy, Naval Ordnance Test Station, China Lake facilities for aircraft ranges, NOY 76457, Spec. 37197. $1,000,000. Plans deposit $100.

▲† **Oregon**—B.A. After 12/19—Bureau Reclamation, Dpt. Interior, Bend, constr. Savage Rapids Dam Rehabilitation, Grants Pass Proj., on Rogue River approx. 5 mi. east of Grants Pass. Prospective bidders are invited to inspect the site in the near future in order

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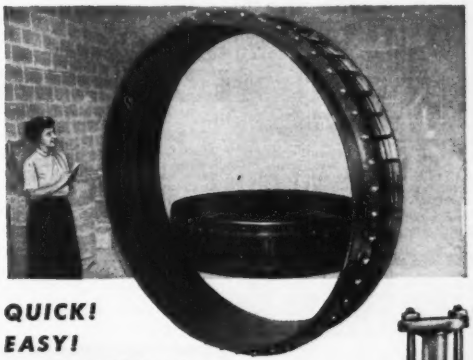

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that they may be informed and in a position to submit a bid when the work is advertised. CD 9/7/44.

BIDS ASKED—BUILDINGS

▲ **Calif., Barstow**—HOUSING—B.A. 12/16—Dpt. Navy, San Diego, construct, manage, finance Navy Housing, Project N-21, $2,500,000. Bids July 8 rejected. CD 7/14, under LB.

▲ **Calif., San Francisco**—HOUSING—B.A. 12/16—San Francisco Housing Auth., 440 Turk St., low-rent 172-unit housing, Potrero Annex, Proj. Cal 1-10, $1,600,000. Plans deposit $100. Ward & Bolles, 215 Leidesdorff St., archts. CD 5/4/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Russ Mitchell, Inc. & Bruce Constr. Co.**, P.O. Box 7421, Fort Worth, 11, Texas, CA, $2,590,405 completion of outlet works, Lucky Peak Dam, Inv. 53016, IDAHO. U. S. Eng., City-County Airport Walla Walla, Wash. Bids Oct. 16. CD 10/21, under LB.

▲† **Morrison-Knudsen Co., Inc.**, 411 W. 5 St., Los Angeles, Calif., CA, $1,318,473, est. $1,135,074, earthwork, concrete lining, structures, Wellton Canal, Station 918 plus 25.75 to 1059 plus 25.23; lateral M-14.8 Station 0 plus 68.46 to 17 plus 66.00 and Unit 1 Wellton Distribution System, Gila Proj., Spec. DC 3808, ARIZONA. Bureau Reclamation, Dpt. Interior, Yuma, Ariz. Bids Oct. 23. CD 11/5, under LB.

† **H. Earl Parker, Inc.**, 12 and F Sts., Marysville, Calif., CA $818,771, levee construction, bank protection along left bank of Sacramento River near Freeport, Spec. 1704, CALIFORNIA. U. S. Eng., Wright Bldg., Sacramento, Calif. Bids Oct. 28, awarded Nov. 10. CD 11/6, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles.

Ukropina-Polich-Kral, P.O. Box 105, San Gabriel, Calif., LB. $2,559,019, c. conc. on cement treated subgrade surf., 3.8 mi., 5 bridges, retaining wall, Los Angeles River Freeway between 223 St. and south junction on Atlantic Ave., Los Angeles Co.;

Geo. Herz & Co., Box 191, San Bernardino, Calif., LB. $144,685, grading, surf. 2.4 mi. Milliken Ave. between Mission Blvd. and Valley Freeway, San Bernardino Co. Bids Nov. 6. CD 10/15.

▲ **Stolte, Inc. & Fred J. Early, Jr. Co., Inc.**, 8451 San Leandro St., Oakland, Calif. CA. $3,597,500. 54 m.g.p.d. capacity sewage treatment plant;

Stockton Constr. Co., P.O. Box 1177, Stockton, Calif., CA. $712,000. 72 in. influent and 78 in. effluent lines for City, SACRAMENTO, CALIF. City, City Hall, Sacramento, Calif. Bids Oct. 30, awarded Nov. 7. CD 11/6, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

C. H. Elle Constr. Co., 390 Yellowstone Ave., Pocatello, Idaho, LB, $640,085, rein.-con., brick face LIBRARY, Idaho State College, POCATELLO, IDAHO. State Bd. Educ., Pocatello, Idaho. Bids Nov. 14. CD 10/30.

▲ **Lindgren & Swinerton**, 605 W. Olympic Blvd., Los Angeles, Calif., CA, $1,300,000, 278,400 sq. ft. FACTORY Addn., EAST LOS ANGELES, CALIF. Crown Williamette Div. of Crown Zellerbach Corp., 2945 E. 12 St., Los Angeles, Calif. Albert C. Martin & Assoc., 333 S. Beaudry Ave., Los Angeles, Calif., archts.

▲ **The McCarthy Co.**, 1138 S. Broadway, Los Angeles, Calif., Owner Builds, $2,019,000, 250 frame, stucco DWELLINGS, Wadkins, Dublin and 146 Sts., GARDENA, CALIF. Hugh Gibbs, 441 E. 1 St., Long Beach, Calif., archts.

The Atherton Co. 13421 San Antonio Dr., Norwalk, Calif., CA, $780,000, 75 frame, stucco HOMES on Studebaker Rd., Vuelta Grande, Nipomo, Petaluma and Woodruff Aves., LAKEWOOD, CALIF. Jackdaw Homes, Inc., Indigo Homes, Inc., Nightingale Homes Inc., Lark Homes, Inc., Marble Homes, Inc., 31421 San Antonio Dr., Norwalk, Calif.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **United Contractors**, Fairbanks, Alaska, LB $425,043, 2 story, bsmnt., 60x100 ft. rein.-con. communications center, Ladd Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska, Bids Nov. 14. CD 10/16.

▲† **Northern Ready-Mixed**, Anchorage, and **Nelse Mortensen Co., Inc.**, 1021 Westlake Ave. N., Seattle, Wash., LB $4,591,075, 135,000 cu. yd. wet-mixed concrete aggregates and grout at Ladd and Eielson Air Force Bases, Inv. 53-23, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Nov. 13.

▲ **Ketchikan Public Utilities**, Ketchikan, Alaska rejected bids Nov. 10, 4,500 ft. 7x8 ft. tunnel, clearing for penstock line, 400 ft. 2.3 kv, feeder line, wharf and barge grid, first-phase constr. of Beaver Falls Power Plant expansion, KETCHIKAN, ALASKA. LB $1,191,217. CD 11/17, under LB.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Ont., Malton**—HANGAR—B.A. 12/1—Trans-Canada Airlines, International Aviation Bldg., Montreal, Que., aircraft hangar at Malton Airport, largest commercial hangar in Canada, $2,000,000. Plans deposit $100. Margison, Babcock & Assoc., Ltd., 21 Richmond St. W., Toronto, engrs.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **W. B. Sullivan Constr., Ltd.**, 30 Bloor St. W., Toronto, Ont., LB, $1,029,499, 3 story incinerator building, Commissioners St., TORONTO, ONT. City, A. A. Lampor, mayor, City Hall, Toronto, Ont. Bids Nov. 10. CD 10/1.

BUILDINGS

LOW BIDS AND CONTRACTS

Hughes Constr. Co., Ltd., 365 Rogers Rd., Toronto, Ont., CA, $760,400, Science Service LABORATORY, BELLEVILLE, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Nov. 12. CD 10/23.

Doran Constr. Co., Ltd., 5 Concord St., Ottawa, Ont., CA, $943,243, Virus LABORATORY at Tunney's Pasture Development, OTTAWA, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Oct. 29. CD 10/51.

▲ **Commonwealth Constr. Co. Ltd.**, Royal Bank Bldg., Winnipeg, Man., CA Approx. $3,000,000, reconstruction GRAIN ELEVATOR No. 4, PORT ARTHUR, ONT. Saskatechewan Pool Terminals Ltd., Public Utilities Bldg., Port Arthur, Ont. Awarded Nov. 14. CD 10/29.

Bennett-Pratt Ltd., 5 Maple Leaf Dr., Weston, Ont., LB, $774,055, modernization of Riverdale COLLEGIATE incl., 72x30 ft. new boys gym., 25x60 ft. swimming pool, 35x75 ft. girls gym., TORONTO, ONT. Bd. Educ., 155 College St., Toronto, Ont. F. C. Ettherington, c/o owner, ch. archt. CD 12/15/43.

Pigott Constr. Co. Ltd., 1250 Bay St., Toronto, Ont., CA, $750,000, 6 story, 75x75 ft., steel, stone brick COMMERCIAL BLDG. addn., TORONTO, ONT. North American Life Assurance Co., 112 King St., W., Toronto, Ont. CD 2/6/5.

▲ **Cairns Constr. Co. Ltd.**, 2136 Queen St., Regina, Sask., Owner Builds, $1,250,000, 100 concrete, brick DWELLINGS in Lakeview Sub-division, REGINA, SASK. CD 11/18.

U. S. POSSESSIONS

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Rogers & McGraff, Inc.**, 1221 Kenilworth Ave. N.E., Wash., D. C., CA. $1,504,979, aircraft refueling sys., roads and cantonment paving at Ramey Air Force Base, Inv. 53-4, AGUADILLA, PUERTO RICO. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. Bids Oct. 22. CD 11/11, under LB.

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Maximum capacity 500,000 BTUs

PORTABLE HEAT

The solution to heating problems of winter time construction. Chinook is being hailed as revolutionary for crop drying, floor laying, thawing, aircraft warm-up, etc. In fact wherever instant, SAFE, on-the-spot, controlled heat is needed...CHINOOK WIND is providing it...CHEAPER.

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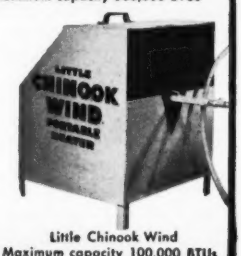

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INTERNATIONAL MANUFACTURING CO.

2249 South Delaware Street Denver, Colorado

Hangar paving & utilities, N. Y.

At New York City's International Airport on Sept. 2 the Tufano Contr. Co. began a nine-month, $507,000 job of paving and utilities for hangar #6, the adjoining runway, parking area and apron. Work includes 16,000 ft. of excavation, 27,000 cu. yds. of fill, 3,700 lin. ft. of concrete curb, and 45,000 sq. yds. of pavement of which 5,500 sq. yds. are inside the hangar. W. C. Borland, coordinator of Airport engineering, Port of New York Authority, is the engineer.

The Port of New York Authority will supply switchgear unit, wire, isolating transformers, taxiway marker lights, lead assemblies, and cables.

Wage rates are: carpenters, $3.24 per hr, seven hour day; electrical workers, $3.79 per hr, six hour day; and laborers, $2.05 per hr.

Bidding among the four contractors competing for the contract was widely spread with the high bid showing an increase of 50% over the low bid, and the second low, 12% above the low. Bidders include:

1C Tufano Contr. Co., Flushing, N. Y.	$507,564
2 Gull Contr. Co., Inc., Flushing, N. Y.	567,500
4 Wortmann & Sons, Inc., N. Y., N. Y.	759,258

Bids: 8-12-52 Items	Unit	Quantity	Unit Prices 1 C	2
Cl A excavation	cy	2,400	$0.45	$0.60
Cl B excavation	cy	13,500	1.80	1.50
Fill	cy	27,000	0.45	1.10
Concrete	cy	435	40.00	35.00
Conc reinforcement	lb	34,000	0.20	0.16
Conc curb	lf	3,700	1.40	1.50
Conc sidewalk	sy	535	5.80	3.25
Misc metal	lb	33,000	0.25	0.30
Cl soil pipe, 4"	lf	160	3.55	2.50
6"	lf	100	5.70	4.00
10"	lf	270	10.65	8.50
12"	lf	500	12.75	10.00
Brass water pipe, 1"	lf	30	7.00	6.00
2"	lf	1,050	3.90	3.00
2½"	lf	320	5.47	4.50
Asb-cmt sewer pipe, 8"	lf	450	6.50	4.00
Cl water pipe, Cl B, 4"	lf	70	14.75	12.00
6"	lf	70	9.25	8.00
8"	lf	470	12.45	10.00
Cl water pipe, Cl E, 6"	lf	45	23.75	20.00
8"	lf	260	25.00	20.00
Gate valves, 1"	ea	6	19.00	20.00
2"	ea	4	26.00	25.00
2½"	ea	1	58.00	60.00
4"	ea	1	76.00	100.00
6"	ea	5	108.00	200.00
8"	ea	2	355.00	350.00
Fire hydrants	ea	5	223.00	200.00
Sanitary post hydrants	ea	6	135.00	135.00
Reinf conc pipe, 12"	lf	1,260	3.50	3.00
15"	lf	1,300	4.00	3.50
18"	lf	920	5.00	5.00
24"	lf	470	6.00	8.00
30"	lf	960	9.00	10.00
36"	lf	660	11.00	13.00
48"	lf	200	13.00	20.00
54"	lf	1,370	16.00	24.00
Adjust elevations of existing manholes	ea	12	40.00	150.00
Stone screen foundation cree for conc pvmnt	sy	15,600	1.00	1.15
Conc pavement	cy	5,500	15.00	18.00
Portland cmt	bbl	9,625	4.51	4.00
Type I pavement	sy	13,800	1.55	2.20
Type IIA pavement	sy	5,650	2.35	3.00
Type IV pavement	sy	23,500	3.40	4.00
Mall pavement	sy	380	1.88	2.00
Storage area pavement	sy	1,350	0.90	1.50
Blast fence	lf	840	18.10	28.00
Chain link fence	lf	600	4.35	4.00
Oil separators	ea	2	1,470	2,500
Cl mooring eyes	ea	30	13.56	20.00
Light boxes, type I	ea	12	160.00	200.00
Light boxes, type IA	ea	2	170.00	225.00
Elec handholes, type H2	ea	14	150.00	90.00
Elec manholes	ea	1	365.00	400.00
Utility units	ea	6	495.00	1,000
2-way, 3", duct bank	lf	1,000	3.33	2.00
1-way, 4", duct bank	lf	760	2.16	1.80
2-way, 4", duct bank	lf	400	3.50	2.70
3-way, 4", duct bank	lf	460	4.97	3.50
4-way, 4", duct bank	lf	460	6.33	4.50
6-way, 4", duct bank	lf	95	8.89	6.00
2-way, 5", duct bank	lf	70	4.06	3.00
3-way, two 5" & one 4" duct bank	lf	260	5.45	3.50
Steel conduit, 1"	lf	220	1.92	2.00
2"	lf	70	2.78	2.50
2½"	lf	25	3.54	2.80
Taxus Caspidata	ea	2	25.00	50.00
Kalmia Latifolia	ea	6	10.00	15.00
Azalea-Kurume	ea	24	5.00	10.00
Rhododendron-Carolinianum	ea	2	10.00	50.00
Spiraea Deutzia Gracilis	ea	50	2.00	3.00
Spiraea Thunbergi	ea	10	2.00	3.00
Berberis Thunbergi	ea	450	1.00	0.50
Cydonia Japonica	ea	8	2.00	3.00
Berberis Julianae	ea	28	5.00	3.00
Topsoil & seeding	sy	5,800	1.30	1.10
Electrical installation	ls	1	22,500	13,500

Air base utilities, Minn.

Construction of roads and utilities at Duluth Air Force Base, Minnesota, by the U. S. Corp. of Engineers got under way during the first week in October after the award of the $189,000 contract to A. A. Bodin & Sons, Duluth. Work consists of installing cast iron and clay pipe; bituminous paving and grading of roads; expansion of the steam distribution system and sewage treatment plant; and installation of water distribution and electric distribution systems. Between 60 and 300 days are allowed for completion of contracts.

With the exception of thirteen obstruction lights furnished by the government, the contractor furnishes all materials including twenty-five street lights.

Wage rates are: carpenters, $2.35 per hr; electrical workers, $2.42 per hr; and laborers, $1.70 per hr.

The high bid was 47% above the low and the second low was 9% above the low in the final comparison of the six bids which were entered for the contract. Bidders include:

1C A. A. Bodin & Sons, Duluth, Minn.	$189,192
2 Southard Eng. Co., Springfield, Mo.	205,920
6 Carlson-Duluth Co., Duluth, Minn.	278,627

Bids: 9-25-52 Items	Unit	Quantity	Unit Prices 1 C	2
Roads, etc.				
Common exc	cy	8,800	$1.50	$0.50
Rock exc	cy	400	5.00	3.00
Unstable exc	cy	1,570	1.75	1.00
Spot sub-grade reinf	cy	50	3.00	3.00
Gran cohesionless mat	cy	50	3.00	3.00
Select mat subbase crse	cy	1,570	2.50	1.50
12" stab aggreg base crse	cy	2,575	2.75	3.00
Bitum prime coat	gal	2,000	0.25	0.22
Bitum mat for sur trmnt	gal	4,470	0.25	0.22
Min aggreg for sur trmnt	t	218	4.50	6.00
15" pipe culverts	lf	354	3.00	3.00
Conc curb & gutter	lf	530	3.00	3.50
Topsoiling, seeding & mulching	ls	1	250.00	2,800
4" conc walk	sf	350	0.60	0.60
Water dist sys, sanitary sewer collec sys, & domestic water supply booster pump, compl	ls	1	43,473	50,260
Elec dist sys & st lighting sys, compl	ls	1	32,500	39,000
Steam dist sys & central htng plant expansion	ls	1	53,300	61,016
Sewage treatment plant expansion	ls	1	25,055	28,760

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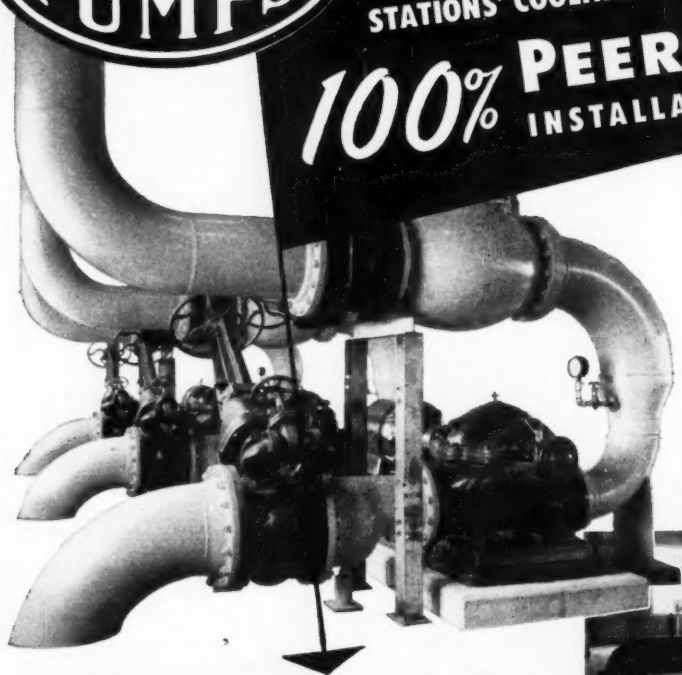
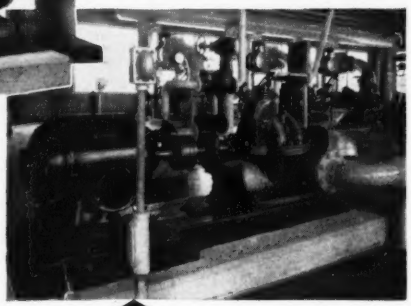
PEERLESS PUMPS

NATURAL GAS PIPE LINE COMPRESSOR STATIONS' COOLING WATER PUMPS ARE 100% PEERLESS INSTALLATIONS

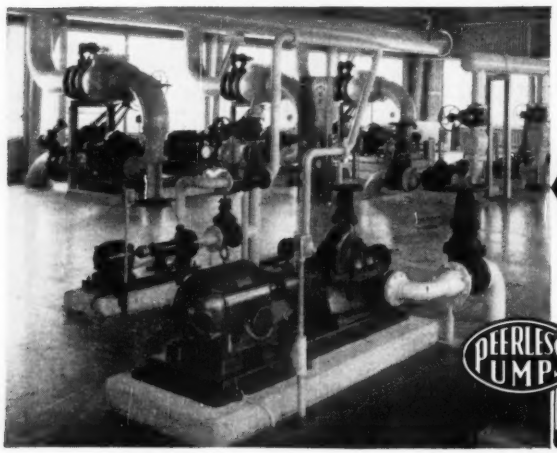


One of the most recently completed natural gas pipe lines runs from Texas to Illinois. Views here show a 100% installation of Peerless pumps in one of the typical 10,000 hp compressor stations now in operation on this line. Pumps are installed in parallel batteries to handle water flow through dual cooling units. One unit cools jacket water, the other unit cools water used in heat exchange units of the lube oil cooling system.

PEERLESS SINGLE STAGE & MULTI-STAGE HORIZONTAL PUMPS HANDLE WATER TO STATIONS' DUAL COOLING UNITS



View above shows typical station arrangement of Peerless pumps installed in one of the compressor stations on the line. Single stage Peerless Type A and multi-stage Peerless Type TU pumps, both of horizontal split case design, are used to handle water to cooling systems.



View at left shows one of the multi-stage Peerless Type TU horizontal split-case pumps installed in these stations. Ample overload capacity is provided so that one or more pumps in each battery can be shut down without impairing cooling water circulation.

Write today for descriptive engineering Bulletins on both Type A and Type TU Peerless pumps.

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FOOD MACHINERY AND CHEMICAL CORPORATION
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Mortgage trading market stirs action

Answers to two problems of major import to the construction industry seemed included in the establishment last week of an open market for first and second mortgages in the New York metropolitan area:

1. A source of ready cash for lenders and owners.

2. An answer to growing criticism by builders and financial men of FNMA operations—a private-capital answer to the cry for federal money.

The exchange itself was set up by one of New York's old-line mortgage houses, the Lawyers Mortgage and Title Company. It will work this way, according to Harry Fromkes, LM&T president:

The New York Mortgage Exchange will bring together buyers and sellers for mortgages listed with it—handling transactions in somewhat the same manner as stock exchanges do.

The exchange will inspect all properties listed, but will not appraise the buildings and land. However, it will classify the mortgages into five categories—AA, A, B, C and D, which will be quoted as: AA, ranging from 100 up; A, 90 to 100; B, from 80 to 90; C, from 70 to 80; D, 60 to 70. Various amounts, interest rates and terms will be available within each class.

The exchange will collect commissions of 1% from both buyer and seller, and the seller will, in addition, pay listing fees ranging from $15 to $100. The exchange demands a 30-day exclusive listing.

• **Significance**—For the building industry, closely tied as it is to financing, the exchange offers a local source of ready money to prospective buyers. Officials are certain that transactions can be consummated in a matter of days instead of weeks through hitherto conventional channels. Observers saw the possibility that a speculative home builder, for example, might offer to take buyers' mortgages (or second mortgages) himself—in the belief he could quickly cash the paper at little cost to himself.

More significantly perhaps, is the opening of a far broader market for investment in mortgage paper. At present, the two big buyers of mortgages are banks and insurance companies.

Both of these sources are limited in their purchases by some legal and financial reasons—how much of their liquid money assets they can tie up in long-term mortgages.

Until the establishment of such an agency as the New York Exchange, the two big buyers of mortgages had only one place to go if they wished to convert some of this paper again into liquid cash—FNMA.

A creature of Congress, FNMA is also limited in its activities by federal appropriations for purchase of paper; and by law which requires that it deal in so-called secondary paper only—mortgages bought from the original mortgagee.

The result of these conditions has been a gradual tightening of the market for mortgages, as big buyers curtailed their activities.

At the same time, the many private investors who have traditionally sought to place their funds in mortgages have been confined completely to personal sources for news of investment offerings in this field.

• **FHA and VA not included**—As now constituted, the exchange will not deal in FHA or VA mortgages. Officials explained that current low interest rates on these loans make them unattractive to many investors.

Olin enters field as DPA okays third round of aluminum expansion

The much-discussed third round of aluminum expansion was launched last week when the Defense Production Administration issued certificates of necessity for fast tax write-offs for a new, $170-million installation.

Olin Industries, Inc., of East Alton, Ill., whose products range from munitions to chemicals, will be the new producer.

No government financing will be involved in the project; Olin has arranged for private financing. Location of the new plant was not disclosed.

DPA granted the company fast-tax-amortization certificates on new capacity to produce 110,000 tons of primary aluminum a year. The certificates also cover fabricating facilities to produce about 40,000 tons of wide, high-strength aluminum sheet and more than 12,000 tons of extrusions.

Early last month, the Defense Production Administration boosted the expansion goal for primary aluminum by 200,000 short tons a year. At that time, the agency publicly invited newcomers to get into the program.

Samuel W. Anderson, DPA's deputy administrator for aluminum, said that last week's action was part of the government's program to meet the new expansion goal.

It is known that the government agency is now negotiating with other potential aluminum producers to obtain another 90,000 tons of aluminum ingots annually, as part of this third round expansion.

• **Meets requirements**—Olin satisfied two firm government requirements in entering the aluminum field. First, the Defense Production Administration was reluctant to permit further expansion of the "Big Three" in aluminum—Alcoa, Reynolds and Kaiser. The Anti-Trust Division, for one, opposed any government incentives, even tax benefits, to those three.

The second point, one not easily met by many would-be producers, involved financing. The government did not want to make any direct government loans to get a new producer started. Olin succeeded in lining up private capital for the entire project.

This is the second time the government has managed to get a newcomer to enter the aluminum field.

In December, 1951, Defense Production Administrator Manly Fleischmann authorized the Anaconda Copper Co. to go into large-scale aluminum production (ENR Dec. 20, 1951, p. 68). The DPA action was taken despite vigorous protests from the Justice and Interior departments.

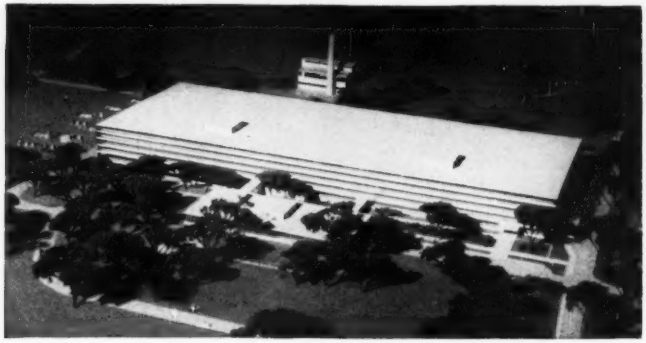
Anaconda joined with Harvey Machine Co. in constructing a $40-million aluminum reduction plant at Kalispell, Mont.

Although the Harvey company had originally sought an RFC loan for $46 million to finance the project, Anaconda's partnership made this government financing unnecessary, and the loan request was withdrawn.

Fleischmann justified the Anaconda-Harvey entry into the aluminum field:

• No government loans.

• There would be no threat of a monopoly because the Anaconda-Harvey Montana plant would produce only 72,000 tons a year, roughly 4% of domestic output.



Efficient files center planned

Bids for an $18-million Defense Military Personnel Records Center to be constructed in Overland, Mo., a suburb of St. Louis, are to be asked for late next spring. Six stories high, the building will be 728x282 ft in plan, with about 1,300,000 sq ft of floor area.

It will be of flat-bed construction with floor slabs 8 in. thick. Preliminary plans call for no expansion joints despite the size of the building. Insertion of control joints at intervals of about 45 ft is being considered.

The building will house thousands of file cases. Hence, every floor is designed for a live load of 200 psf. Columns will be spaced about 22 ft apart, making it possible to arrange the 27 different sizes of file cabinets in crosswise or lengthwise rows with minimum waste space. Eventually, the cases may be stacked two high throughout the building.

Temporary partitions will form offices along the north side of each floor. This arrangement, together with placement of two sets of moving stairs at the building's quarter points, makes it possible for each employee to do his filing within a radius of 200 ft of his desk.

Two service cores at the quarter points will contain moving stairs, freight elevators, lavatories, utility lines, mail-control rooms with dumb waiters for floor-to-floor communication, and wastepaper chutes. The stacks are about 50x54 ft.

The outside of the building consists of 2½-ft high concrete-block apron walls and continuous, horizontal bands of heat-retarding glass.

A cafeteria building large enough to accommodate 4,000 employees will be connected to the north side of the records building by two covered passageways.

Parking lots at the two ends of the building will have a capacity of 1,500 automobiles.

• **Other details**—Steam for heating will be generated in a separate building and will be supplied to both the Records Center and the Army Publication Center, which is now under construction on an adjacent site.

Fluorescent lighting is to be used throughout. Fixtures are designed to be rotated, if desired, to improve the lighting if arrangement of file cabinets should be changed.

The new center will hold 19 million Army and Air Force individual records, now kept in the Army Administration Center in St. Louis. The records are those of persons who have been demobilized. Some 12½-million similar Navy records are to be moved into the new building later.

Requests for information reach the center at the rate of 30,000 to 40,000 a week and have run as high as 51,000 in a single week. Typical requests are for advice whether a person is entitled to veterans' housing or education benefits, pensions, military decorations, or military burial.

The center gives 24-hour service on most requests.

Plans and specifications for the project are being prepared by Associated Architects & Engineers, a partnership in which the architects are Hellmuth, Yamasaki and Leinweber; electrical and mechanical engineer is John D. Falvey, and structural engineer is William C. E. Becker.

The new center will be operated by the Demobilized Personnel Records Branch of the Adjutant General's Office. Chief of the branch is Col. H. H. Newman. Maj. M. O. Billbe is project officer for both the record center and publication center buildings.

Contractor acquitted in bridge collapse

A manslaughter charge against the contractor in connection with collapse of a temporary highway bridge has been dismissed in a County Superior Court at Windsor, N. C.

Similar charges against the inspector-engineer for the contractor and a state highway commission inspector have ended in a mistrial.

The charge against Harvey H. Stewart, of Charlotte, the contractor (ENR Apr. 17, p. 27) was dismissed at the end of the state's evidence on the ground that there was no evidence that he was ever in the bridge area.

Charges against W. S. Murph, inspector-engineer for Stewart, and J. M. Clagon, state highway commission inspector, ended in a mistrial Nov. 21 after five days of court hearings, when solicitor Ernest R. Tyler learned that one of the jurors was related by marriage to a defense witness.

Manslaughter charges arose from the death of Ernest C. Conner, Norfolk, Va., truck driver who was drowned May 17, 1951, when the tractor-trailer truck he was driving broke through part of a temporary bridge over the Roanoke River, between Scotland Neck and Rich Square, N. C.

During the trial, the state presented John H. Bruning, Norfolk civil engineer, who made an investigation and report on the condition of the bridge following the accident.

Bruning testified that there were defects in the wood used in the construction of the bridge. The state introduced specimens of wood from a span which it claimed had insect holes. The state also claimed that some of the timber used did not meet highway commission thickness specifications.

• **Defense**—The defense attorneys contended that all of the timber used in the bridge was passed by highway commission inspectors (ENR Sept. 25, p. 85). The defense also argued that Stewart merely followed specifications laid down by the highway commission, and therefore the contractor was not responsible for collapse of the bridge.

Commission picks site for $12.5-million bridge

The Tennessee-Missouri Bridge Commission last week approved a site for a new bridge across the Mississippi. The group approved a plan to build a $12.5-million bridge one mile north of Caruthersville, Tenn. This bridge would cross the river at Powell's Ferry, southeast of Ridgely, Tenn.

No appeal slated in turnpike case

Attorney General John G. Fox said last week that the State of West Virginia will not appeal the ruling of a district court that the State Highway Commission acted within its rights in planning a two-lane toll super highway (ENR Nov. 20, p. 26).

Contractors were told to return to work on the 88-mi expressway between Princeton and Charleston.

Work which had been started on a section of the route near Princeton was halted in September after an attorney general's opinion said that proposed two-lane expressway did not conform to the 1947 legislative act requiring a divided multiple-lane toll road.

The State Highway Commission contended it had the right under the law to build the Princeton-Charleston road in stages.

Judge Ben Moore, who presided in the U. S. District Court of Southern West Virginia, upheld the commission's view.

Guaranty Trust Co., of New York, trustee for the holders of $96 million in bonds sold by the commission to finance the project, started the suit to compel the highway commission to proceed with construction of the two-lane toll road.

Merritt, Chapman & Scott gets Savannah bridge award

A $12-million award to Merritt, Chapman & Scott Corp., of New York City, was announced last week for construction of a high-level bridge over the Savannah River. The bridge will provide a 5.5-mile shortcut for the existing U. S. 17 coastal route linking Georgia and South Carolina.

The Savannah River crossing will provide a direct north-south route running approximately nine miles between Savannah, Ga., and a point on U. S. 17 below Hardeeville, S. C. The route will permit traffic to bypass industrial Savannah.

Key feature of the crossing will be a high-level cantilever bridge 5,888 ft long, providing 135 ft of vertical clearance over the 400-ft wide channel.

A 710-ft center span and two anchor spans of 284 ft each will be supported by four twin-shafted reinforced concrete piers.

A 1,950-ft approach section on the Savannah side will consist of girder spans supported by single-shafted piers of reinforced concrete. There will be 27 similar girder spans in the 2,660-ft approach on Hutchinson Island.

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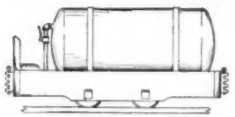

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U. S. school loans top $40 million

Construction of dormitories, housing and related facilities for the nation's colleges and universities has received great impetus in the last three years as a result of loans granted by Public Housing Administration and Housing and Home Finance Agency.

Nearly $40 million has been loaned for long terms at low interest rates since Congress authorized the program in the Housing Act of 1950. The law provides for terms of a maximum of 40 years (which is what most colleges take) and interest rates ¼ of 1% higher than the highest rate on present long-term government obligations. At the present time, the highest rate is on the Series K bonds—2.76%—so interest rates for the colleges are set at 3.01%. Under the provisions of the act, the President is authorized to release up to $300 million for these loans. To date, $100 million has been released.

Colleges that cannot otherwise obtain the financing they need at comparable terms are entitled to apply for these long-term, low-interest loans from HHFA. Since the outbreak of the Korean war, these loans have been limited to institutions whose housing needs are related to the defense effort—those running ROTC units, federal research projects, training programs related to the defense effort, or nursing and health training programs. More than 120 applications have been received, totaling over $100 million.

Colleges that have received loans have put over $4 million of their own into this construction activity, with total construction nearly $45 million.

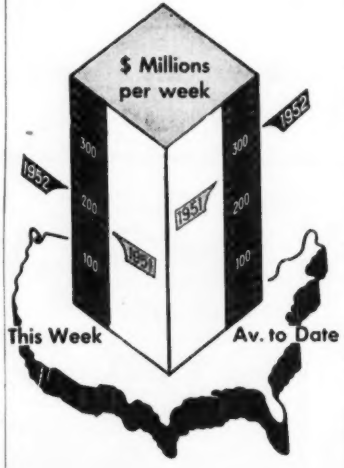
• **Loans made**—Examples of these projects: $1.25-million loan to Baylor University at Waco, Tex., for construction of dormitories for 366 women students. Defense relationship in this case is largely through training in fields important to national defense, such as nursing, laboratory technician training and pre-medicine.

Another loan of $1 million to the University of Florida at Gainesville for construction of dormitories for 400 students at a total cost of $1.25 million. The University of Florida has more than 2,749 men students participating in ROTC units at the university, whose ROTC program is the largest in the South. An earlier loan of $1.9 million, for the construction of student housing, was approved in September, 1951.

A $2-million loan for construction of dormitories for 676 men students at the University of Nebraska.

Activity This Week

As reported to ENR (in millions of dollars)



Contracts by type of work

	This Week*	Cumulative 48 wks 1952	1951	% chge
Waterworks	$1.5	$206.5	$195.2	+6
Sewerage	5.7	279.6	311.1	−10
Bridges	5.4	393.3	294.3	+34
Highways	17.4	1,345.4	1,098.4	+22
Earthwork, waterways	8.2	453.3	472.2	−4
Buildings:				
Public	22.5	4,174.9	1,971.0	+112
Housg., pub.	2.2	575.8	594.3	−3
Housg., priv.	60.5	2,782.7	1,880.6	+48
Commercial	22.2	711.9	573.5	+24
Industrial	34.6	2,596.3	3,864.6	−33
Unclassified	22.9	1,262.6	1,521.0	−17
Total	**$203.1**	**$14,782.3**	**$12,776.0**	**+16**

* 4-day week

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR indexes		Base Year = 100 1913	1926	1949
Constr. cost.	Nov.	588.61	282.94	123.39
	Oct.	588.43	282.86	123.27
Bldg. cost...	Nov.	426.04	230.30	121.10
	Oct.	424.77	229.62	120.70
Volume	Oct.	540	219	136

OFFICIAL PROPOSALS

Bids: December 18, 1952

Construction of a Vehicular Tunnel

WEST VIRGINIA TURNPIKE

Sealed proposals will be received by the West Virginia Turnpike Commission for:

CONTRACT NO. 14

The work to be done under this Contract consists generally of the construction of a vehicular tunnel, approximately one half mile long for two lanes of traffic from a portal in the vicinity of Fourmile Fork about one half mile west of the town of Standard to a portal about one and one half miles east of the town of Fairfield, in Kanawha County, all in connection with the construction of the West Virginia Turnpike in the State of West Virginia. The Contract includes excavation, concrete lining, drainage provisions, paving, tunnel finish and retaining walls.

The principal items of work include:

	Approximate Quantity
Open Cut Excavation.....	25,000 cu. yds.
Tunnel Excavation.....	91,800 cu. yds.
Permanent Tunnel Steel Supports	900,000 lbs.
Concrete Tunnel Lining....	20,800 cu. yds.
Steel Reinforcing Bars and Welded Wire Fabric....	980,000 lbs.
Cement in Grout.....	6,000 bbls.
Miscellaneous Structural Steel Items.....	167,000 lbs.
Ceramic Glazed Wall Tile..	64,250 sq. ft. (Alternate B)

Proposals will be received at the office of the West Virginia Turnpike Commission, 1340 Wilson Street, Charleston 1, West Virginia, until 9:00 A.M. Eastern Standard Time, and thereafter at the House of Delegates Chamber, State Capitol, Charleston, West Virginia, until 10:00 A.M. Eastern Standard Time on December 18, 1952, at which time and place the proposals will be publicly opened and read.

Contract documents may be examined by prospective bidders during office hours, after November 20, 1952, at the offices of the General Consultants, Howard, Needles, Tammen & Bergendoff, 804 Greenbrier Street, Charleston, West Virginia, and 55 Liberty Street, New York 5, New York.

Contract documents will be furnished for Twenty Dollars ($20.00) for each set, upon application to Howard, Needles, Tammen & Bergendoff, 804 Greenbrier Street, Charleston, West Virginia (mailing address: P. O. Box 5266, Capitol Station, Charleston, West Virginia). Payment will not be refunded and contract documents are not required to be returned. Make remittance payable to Howard, Needles, Tammen & Bergendoff.

Proposals must be made upon the Proposal Forms furnished by the Commission in the manner designated in the Specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the Contract on the outside. Each Proposal must be accompanied by a cashier's or certified check drawn to the order of the West Virginia Turnpike Commission for not less than five (5) per cent of the amount of the Proposal, but not less than $500.00 nor more than $200,000.00 and must be delivered at the place designated above on or before the day and hour named. Copies of the Proposal form to be used for submitting Proposals and of the special addressed envelope are furnished in detached form with the contract documents.

The Contract will be awarded or the Proposals will be rejected within thirty (30) days after the date of opening Proposals. The right is reserved to reject any or all Proposals, and to waive any or all formalities.

THE WEST VIRGINIA TURNPIKE COMMISSION
D. Holmes Morton
Chairman

November 17, 1952

OFFICIAL PROPOSALS

Bids: December 18, 1952

Bluestone River Bridge

WEST VIRGINIA TURNPIKE

Sealed proposals will be received by the West Virginia Turnpike Commission for:

CONTRACT NO. 11

The work to be done under this Contract consists generally of the construction of the five piers and two abutments for the Bluestone River Bridge between Mile 8.7 and Mile 9.0 along the route of the Turnpike near Eads Mill about a mile east of Camp Creek and U. S. Routes 19 and 21 in Mercer County, all in connection with the construction of the West Virginia Turnpike in the State of West Virginia.

The principal items of work include:

	Approximate Quantity
Excavation	4,025 Cu. Yds.
Concrete	3,175 Cu. Yds.
Reinforcement Steel	247,000 Lbs.

Proposals will be received at the office of the West Virginia Turnpike Commission, 1340 Wilson Street, Charleston 1, West Virginia, until 9:00 A.M. Eastern Standard Time, and thereafter at the House of Delegates Chamber, State Capitol, Charleston, West Virginia, until 10:00 A.M. Eastern Standard Time on December 18, 1952, at which time and place the proposals will be publicly opened and read.

Contract documents may be examined by prospective bidders during office hours after November 20, 1952, at the offices of the General Consultants, Howard, Needles, Tammen & Bergendoff, 804 Greenbrier Street, Charleston, West Virginia, and 55 Liberty Street, New York 5, New York.

Contract documents will be furnished for Fifteen Dollars ($15.00) for each set, upon application to Howard, Needles, Tammen & Bergendoff, 804 Greenbrier Street, Charleston, West Virginia (Mailing address: P. O. Box 5266, Capitol Station, Charleston, West Virginia). Payment will not be refunded and contract documents are not required to be returned. Checks for plans and specifications shall be drawn payable to Howard, Needles, Tammen & Bergendoff.

Proposals must be made upon the Proposal Forms furnished by the Commission in the manner designated in the Specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the Contract on the outside. Each Proposal must be accompanied by a cashier's or certified check drawn to the order of the West Virginia Turnpike Commission for not less than five (5) per cent of the maximum Total Amount of the Proposal, but not less than $500.00 nor more than $200,000.00 and must be delivered at the place designated above on or before the day and hour named. Copies of the Proposal form to be used for submitting Proposals and of the special addressed envelope are furnished in detached form with the contract documents.

The Contract will be awarded or the Proposals will be rejected within thirty (30) days after the date of opening Proposals. The right is reserved to reject any or all Proposals, and to waive any or all formalities.

THE WEST VIRGINIA TURNPIKE COMMISSION
D. Holmes Morton
Chairman

November 17, 1952

(More official proposals on pages 77-78-79)

CONTRACTORS

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Americans Are Rolling Up Their Sleeves!

YES, ALL KINDS OF PEOPLE ARE GIVING BLOOD SO THAT OUR WOUNDED MAY LIVE!

● Today, the blood of a Boston bookkeeper may be flowing through the veins of a wounded kid from a Kansas farm . . . the blood of a pretty Southern housewife may have saved the life of a grizzled leatherneck. For, blood is blood, a God-given miracle for which there is no substitute . . . and when a man's life hangs in the balance and blood is needed, there is nothing else to take its place!

Right now the need for blood is urgent. In hospitals —at home and overseas— many men require four and six transfusions during delicate operations. And the blood *must be there*—when it's needed. So give the most precious gift of all—*your* blood!

Be assured that giving blood is neither difficult nor distressing. And what a thrill there is in knowing that you've performed a really unselfish act! So call your local American Red Cross today and make an appointment. And tell your friends and neighbors about your experience. Let them share the wonderful feeling Americans get when they roll up their sleeves—and give blood.

But—

WHAT HAPPENED TO THAT PINT OF BLOOD YOU WERE GOING TO GIVE?

Call Your American Red Cross Today!

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY. SEND ALL ADVERTISEMENTS TO CLASSIFIED ADVERTISING DIVISION, 29TH FLOOR, McGRAW-HILL PUB. CO., INC., 330 W. 42 ST., N. Y. 36, N. Y.

Bids: December 15, 1952

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 15th day of December 1952, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following project: in ROCKLAND & WESTCHESTER COUNTIES: J. S. BIXBY, DISTRICT ENGINEER, PLEASANT VALLEY ROAD, POUGHKEEPSIE, N. Y.

Contract No.	Type	Name of Highway and Miles	Deposit for Plans	Bid Deposit	Department Estimate
H T. 52-4	Bridge Superstructure (Tied Steel Arch, Deck Girders & Alph. I-Beam) Including Steel Towers	New York State Thruway-Hudson Section, Subd 9B (Tappan Zee Bridge) 3 miles	$100	$1,800,000	$35,764,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineer noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

Bids: December 9, 1952

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 35, SECTION 38-C

Route 35, Section 38-C, Cleaning Channel of Stump Creek, in the Township of Madison, Middlesex County. Length 0.20 miles. The estimated item of construction is:
4,000 cu. yds. Channel Excavation

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, December 9, 1952, at eleven o'clock (11:00 A.M. EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by the prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. ABBOTT,
State Highway Commissioner.

Bids: December 9, 1952

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:
ROUTE 44 RELOCATION, SECTIONS 15A & 16A

Construction of twelve bridges and culverts and incidental grading and paving on Route 44 Relocation, Sections 15A and 16A, from Nehonsey Brook to South Branch of Little Timber Creek, in Townships of Greenwich and Logan, Gloucester County, Federal Project No. F-122(10). The principal items of construction are:

Estimated:

Bridge Items
14,619 cu. yds. Concrete in Structures
1,333,900 lbs. Reinforced Steel in Structures
16,330 lin. ft. Untreated Timber Piles
23,259 lin. ft. Treated Timber Piles
5,987 lin. ft. Cast-in-place Concrete Piles

Roadway Items
1,714 cu. yds. Roadway Excavation-Earth
25,459 cu. yds. Wet Excavation
169,166 cu. yds. Borrow Excavation
14,238 sq. yds. Macadam Base Course
14,238 sq. yds. Mod. Pen. Mac. Inter. Course
1,547 tons Pavement, Type MA-BC-1
4,982 lin. ft. White Conc. Vertical Curb

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, December 9, 1952, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by P. L. 413, 82nd Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the N. J. State Employment Service, 21 Delaware Street, Woodbury, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $0.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: December 11, 1952

Sewage Disposal System

Proposals will be received by the SALIDA SANITARY DISTRICT, Salida, California until 7:30 o'clock, December 11, 1952 for performing work as follows: Contract No. 1: Construction of a sanitary sewer system with pump station. Approximately 35,600 lineal feet vitrified clay pipe sewerline, with man holes, lampholes, house connections, and appurtenant work. Contract No. 2: Construction of a sewage treatment plant comprising reinforced concrete Imhoff Tank, oxidation ponds, sludge beds, gate structures and appurtenant work. Plans, specifications and proposal forms may be obtained upon deposit of $35.00 for Contract No. 1 and $20.00 for Contract No. 2, from LAWRENCE ADAMS, District Engineer, 817 Tenth St., Modesto, California.

Bids: January 6, 1953

Community War Memorial

Notice is hereby given that sealed proposals will be received at the office of Division of Purchase and Supply, 37 City Hall, Rochester, New York until 11:00 A.M., EST, Tuesday, January 6, 1953 for the erection of the Community War Memorial, according to drawings and specifications prepared by Kaelber & Waasdorp, Architects, 311 Alexander Street, Rochester 4, New York.

This project has received N.P.A. approval and carries an allotment rating for critical materials.

Drawings and specifications together with official bidding form may be secured at the office of Kaelber & Waasdorp, Architects, 311 Alexander St., Rochester 4, New York, who are the authorized architects pursuant to Council Ordinance No. 50-238; upon presentation of a check in the following amounts:

General Construction Work	$60.00
Plumbing and Drainage Work	40.00
Electric Wiring & Fixture Work	40.00
Heating Work	40.00
Ventilating Work	40.00
Refrigeration and Rink Piping	40.00

Such amount will be refunded to bidder actually submitting a formal bid together with a certified check upon the return of drawings and specifications in good condition to Architects' office within (30) days after the date when bids are opened. Non-bidders returning such sets will be refunded one-half of deposit.

Complete sets of drawings and specifications will be on file at The Architects' office and at the office of Division of Purchase and Supply and the Builders Ex-

(Continued next page)

OFFICIAL PROPOSALS

change, which sets may be inspected without charge.

Bids will be taken separately for: General Construction Work; Plumbing and Drainage Work; Heating Work; Electric Wiring and Fixture Work; Ventilating Work; Refrigeration and Kink Piping Work.

Each bidder shall submit in a sealed envelope with his bid the names of all sub contractors and their bids upon which his bid is based. The sealed envelope so submitted, shall have on it the name of the Contractor with the words thereon "Bids of Subcontractor". The Contractor is warned that the bid of each subcontractor must be based on conforming with all the provisions set forth in the Contract to which it applies and which relates thereto, and that he will be required to establish the responsibility of any subcontractor in the same manner as required for the bidder; and that any subcontractor shall be approved or disapproved by the Owner and/or Architects before awarding a contract.

The attention of the bidders is particularly called to the requirements as to minimum wage rates to be paid upon this project.

Each bid shall be accompanied by a certified check in the amount of five percent (5%) of the total amount of the bid.

Each bid must be endorsed with the title of the work to which it relates, the name of the bidder and his address.

The City of Rochester reserves the right to reject any and all bids or proposals as the best interests of the City of Rochester may require.

Conditional bids will not be acceptable.

No Bidder may withdraw his bid within 30 days after the actual date of the opening of proposals.

Fred W. Ereth,
Purchasing Agent,
Purchasing Agent
36 City Hall,
Rochester 14, N. Y.

Dated: November 12, 1952

Bids: December 4, 1952

Soil Explorations and Foundation Investigations at Various Sites on the Horace Harding Expressway Sections 1 & 2, Queens Boulevard to Nassau County Line, City of New York, Queens County, Which Constitutes Contract No. Spec. SM-45

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., Eastern Standard Time, on December 4, 1952 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.

(b) J. J. Darcy, Dist. Engr. Montauk Highway at Little East Neck Road, Babylon, L. I., N. Y.

(c) Charles Schaefer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $21,705.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,086. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

B. D. Tallamy
SUPERINTENDENT OF PUBLIC WORKS

Bids: December 4, 1952

Soil Explorations and Foundation Investigations at Various Sites on Albany River Front Arterial Route City of Albany, Village of Menands Albany County, Which Constitutes Contract No. Spec. SM-47

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., Eastern Standard Time, on December 4, 1952 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.

(b) G. L. Nickerson, Dist. Engr., 353 Broadway, Albany, N. Y.

(c) Charles Schaefer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $40,760.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $2,038. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

B. D. Tallamy
SUPERINTENDENT OF PUBLIC WORKS

Notice to Contractors: Commonwealth of Massachusetts, Department of Public Works, sealed bids or proposals will be received by the Department of Public Works at its office, Room 526, Fifth Floor, 100 Nashua Street, Boston 14, Mass. until 12 o'clock noon, Tuesday, December 23, 1952, immediately after which proposals will be publicly opened and read at the Fourth Floor. The work to be done consists of the construction of a steel frame single story building, with walls of concrete blocks, corrugated steel, corrugated asbestos, 160 feet in width by 600 feet in length; with paved approach roadways; railroad tracks; loading platform; underground utilities for drainage, sewage disposal, water supply and electric service; and interior installation of plumbing, fire protection and lighting. The location of the work is the State Pier at the intersection of Central Street and Water Street, Fall River, Mass. N.P.A. Construction Schedule and Allotment of Materials issued October 1, 1952 by Defense Transport Administration. Charge for specifications is $50.00 which amount is returnable only to general bidders or to subbidders upon return of the plans and specifications in good condition. Proposal guaranty shall consist of a certified check in the amount of $25,000 payable to the order of the Department of Public Works or other security satisfactory to the Department. A bid bond will not be accepted. All such bid deposits, except those of the three lowest responsible and eligible bidders will be returned within two days, Sundays and holidays excluded, after the opening of proposals therefor. All remaining bid deposits will be returned upon the execution and delivery of the contract; or, if no award is made, then at the expiration of 30 days after the opening of bids thereof unless forfeited by failure to sign the contract as hereinafter provided. The successful bidder will be required to furnish a bond for the faithful performance of the contract in a sum equal to the full amount of the contract. The surety may be a surety company or securities satisfactory to the Department. Attention is called to the minimum rate of wages to be paid on the work as determined by the Commissioner of Labor and Industries under the provisions of Chapter 461 of the Acts of 1935, and to the provisions of Chapter 480 of the Acts of 1939, as amended by Chapter 699 of the Acts of 1941 relating to subbidders. Complete information may be obtained from the office of the Department. Right reserved to waive any informality in or to reject any or all proposals. A proposal which includes for any item a bid that is abnormally low or high may be rejected as unbalanced. By: William F. Callahan, Commissioner of Public Works, November 18, 1952.

Bids: December 4, 1952

Soil Explorations and Foundation Investigations at Various Sites on Route 17—Morsston and Twadell Brook Route 52, Interchange at Liberty, N. Y. Delaware and Sullivan Counties, Which Constitutes Contract No. Spec. SM-46

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., Eastern Standard Time, on December 4, 1952 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.

(b) F. W. Donovan, Dist. Engr. 71 Frederick St., Binghamton, N. Y.

(c) Charles Schaefer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $42,881.25.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $2,150. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provision of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

B. D. Tallamy
SUPERINTENDENT OF PUBLIC WORKS

Engineering News-Record

Reaches Your Local Contractors

Its distribution among the contractors of any one state is in proportion to the number of contractors situated in that state. The Official Proposal Columns of *Engineering News-Record* offer precisely the same efficient service to municipalities, counties, state and federal departments in every section of the United States.

OFFICIAL PROPOSALS

Bids: December 4, 1952

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Canal Law, and the requirements of the U. S. Corps of Engineers; Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 4th day of December 1952, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1						
		G. L. Nickerson, District Engineer, 353 Broadway, Albany, New York				
Schenectady	U.S.88	Niskayuna: Barge Canal Lock 7	.....	Extending & Installing Lock gates & Misc. Work	5% of bid Plans $10	Not Published
Greene	C.T.52-9 S.T.52-32 R.C.52-116	New York State Thruway Catskill Section Sub. 7 (Route 23A to 9W): Rte. 23 Interchange; Spooky Hollow Road; Athens Leeds Road; Catskill So. Cairo, S.H.613	Thy. 4.65 Acc. 2.89	9" Cem. Conc. Pavt. 2 @ 25' Var. Wide=7.14 Mi. Asp. Conc. Ty. 1A, Opt.=0.37 Mi. Misc. Work=0.03 Mi. Hy Sep. 4 Sp. Alpha I Beam 226.8' Interchange 2 Sp. Alpha I Beam 162' Hy Sep. Conc. Rig. Frame 34.8'	$279,000 Plans $50	$5,164,000
DISTRICT No. 2						
		Lacy Ketchum, District Engineer, 109 No. Genesee St., Utica, New York				
Oneida	M.T.52-17 S.T.52-33 R.C.52-117	New York State Thruway- Mohawk Section—Sub. 5 (Verona-Lowell): Verona-Verona Station, S.H.1930; Augusta Rd., Lowell & Spencer Sects., S.H.438 Tilden Hill Rd.; Town Road; App. to Tilden Rd.; Westmoreland-Lowell Rd.	Thy. 4.59 Acc. 1.60	9" Cem. Conc. Pavt. 2 @ 25' Var. Wide=4.96 Mi. Asp. Conc. Ty. 1A, Opt.=1.17 Mi. F. C. Gravel=0.06 Mi. Gr. Sep. 4 Sp. Alpha I-Beam 208' Gr. Sep. 4 Sp. Alpha I-Beam 206' Gr. Sep. 4 Sp. Alpha I-Beam 212.3' Gr. Sep. 4 Sp. Alpha I-Beam 272'	$146,000 Plans $50	$2,658,000
DISTRICT No. 3						
		William Robinson, District Engineer, Weigh Lock Building, Syracuse, New York				
Seneca	O.T.52-20 S.H.52-18	New York State Thruway Ontario Section—Sub. 2 (Stone Church Rd.-Tyre) Magee-Clyde Pt. 1A	Thy. 2.24 Acc. 0.39	9" Cem. Conc. Pavt. 2 @ 25' Var. Wide=2.24 Mi. Asp. Conc. Ty. 1A, Opt.=0.39 Mi. Interchange 4 Sp. Alpha I-Beam 226.5' Gr. Sep. 4 Sp. Alpha I-Beam 249.7'	$43,000 Plans $25	$788,000
DISTRICT No. 4						
		J. P. Larsen, District Engineer, Barge Canal Terminal, Rochester, New York				
Genesee	O.T.52-19	New York State Thruway Ontario Section—Sub. 6A (Leroy—Rte. 18 Interchange)	2.80	9" Cem. Conc. Pavt. Var. Wide=2.56 Mi. F.C. Gravel=0.03 Mi. Gr Sep. 4. Sp. Alpha I-Beam 230'	$28,000 Plans $15	$524,000
Monroe	O.T.52-18 S.T.52-31 R.C.52-115	New York State Thruway Ontario Section—Subs. 7A, 7B, 8A, 8B, (Winslow Rd—Rte. 15); Reed Rd.; East River Rd.; Farrell Rd.; Rochester-Scottsville Pt. 2, S.H.79	Thy. 2.84 Acc. 220	9" Cem. Conc. Pavt. 2 @ 25' & Var. Wide=3.47 Mi. Asp. Conc. Ty. 1A, Opt.=0.44 Mi. F.C. Gravel=0.95 Mi. Misc. Work=0.18 Mi. 3 Hy Seps. Structures Closed Box 31.2' 2 Alpha I Beam 138.5' & 287.7' 2 R.R. Sepn. Alpha I-Beam 183' & 143.5' 1 Br. Alpha Girder 300'	$250,000 Plans $50	$4,543,000
DISTRICT No. 5						
		C. R. Waters, District Engineer, 65 Court St., Buffalo, New York				
Erie	F.A.C.52-6	City of Buffalo: Delaware Avenue Project No. U-1078(2)	1.63	Traffic Signal System	$4,000 Plans $10	$70,000
DISTRICT No. 8						
		J. S. Bixby, District Engineer, Pleasant Valley Rd., Poughkeepsie, New York				
Orange & Rockland	P.I.P.52-3 P.I.P.52-4P R.C.52-114	Palisades Interstate Parkway Pt. 1 & 2 (Rte. 45—Queensboro-Bear Mt.) Tompkins Cove-Highland Lake S.H.593 Highland Lake-Fort Montgomery S.H.5480	5.07	8" Cem. Conc. Pavt. 24'-30'-36'-42' Wide=2.16 Mi. Asp. Conc. Ty. 1A, Opt.=1.08 Mi. Roadside Improvement=1.83 Mi.	$70,000 Plans $25	$1,265,000
Orange	R.C.52-113	Cornwall-West Point Pt. 1 S.H.5498	0.01	Stone Retaining Wall & Misc. Work	$1,000 Plans $10	$18,000
DISTRICT No. 10						
		J. J. Darcy, District Engineer, Montauk Highway, Babylon Long Island, New York				
Queens	F.A.V.W.E. 52-1 F.A.G.C.P. 52-1	Van Wyck Expressway Van Wyck Expressway Connection Grand Central Parkway Cont. 15 Project Nos. U-1085(14) U-658(18), U-741(20)	5.78	Roadside Improvement Recreational Facilities & Misc. Work	$43,000 Plans $50	$782,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, and Canal Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

U. S. Government

NOTICE TO CONTRACTORS

Sealed bids will be received by the Chief of the Public Works Division, Office of Territories, Department of the Interior, Room 2713, Interior Building, Washington 25, D. C. until 2:00 P.M., Eastern Standard Time, January 12, 1953 for the construction of the following:

Group I—St. Thomas, Virgin Islands—
Project 53-105
Section A—Charlotte Amalie High School (1)
Section B—Alterations and additions to:
James Madison Elementary School (5)
Robert Herrick Elementary School (6)
James Monroe Elementary School (7)
Group II—St. Croix, Virgin Islands—
Project 53-504
Section A—Christiansted Consolidated School (1)
Section B—Alterations and Additions to LaValee Elementary School (4)

At the time and place indicated above the bids will be publicly opened and read aloud. Bids received after the hour set for the bid opening will be returned unopened.

Plans and Specifications and other proposed contract documents are open for public inspection at the office of the District Engineer, Virgin Islands District Branch, Public Works Division, Thomas G. Mooney, Charlotte Amalie, St. Thomas, U. S. Virgin Islands; M. A. Dyer Company, 24 School Street, Boston 8, Massachusetts; Lester M. Marx, Chief, Public Works Division, Room 2713, Interior Building, Washington, D. C.; A. G. C. Office, 743 Congress Building, Miami, Florida; Builders Exchange, 46 Northeast 6th Street, Miami, Florida; U. S. Department of Commerce, #2, Puerto Rican Reconstruction Administration Grounds, Building N, San Juan, Puerto Rico; F. W. Dodge Corp., 119 West 40th Street, New York 18, N. Y.

A set of such documents may be procured from the office of M. A. Dyer Company (Architects and Engineers) at 24 School Street, Boston, Mass., upon deposit of $75.00 by certified check payable to the Treasurer of the United States, all of which will be refunded to bona fide bidders upon the receipt of the plans and specifications in good condition within thirty (30) calendar days from the date of bid opening. A bona fide bidder includes any person who submits a bid for a general contract but does not include a person who submits a quotation to the general contract bidders.

To persons who procure plans and specifications upon payment of the above stated amount, and who do not submit a bid, $60.00 will be refunded upon the receipt thereof in good condition within thirty (30) calendar days from the date of the bid opening. No refund will be made for return after that time.

Each bid must be accompanied by a satisfactory bid security (certified check or bid bond) in an amount of not less than 5 per cent of the total bid.

The successful bidder will be required to furnish a performance bond and payment bond, each in the amount of 100 per cent of the contract price.

No bid may be withdrawn until thirty (30) calendar days after the scheduled closing time for the receipt of bids.

The Government reserves the right to reject any and all bids and to waive informalities with respect thereto.

The Government also reserves the right to award a contract for any or all sections on the basis of the basic bid for each section or any combination of sections or by the adoption of any or all of the alternates, whichever course is in the best interests of the United States.

Lester M. Marx
Chief, Public Works Division
Office of Territories

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3844) will be received at Kirwin, Kansas until 10 A.M., January 6, 1953, for furnishing labor and materials for: Completion of Kirwin Dam, Kirwin Unit, Solomon Division, Kansas, Missouri River Basin Project. Location: Adjacent to town of Kirwin, Kansas. Principal items are: 10,300,000 cu. yds. excavation; 8,200,000 cu. yds. dam embankment; 43,300 cu. yds. concrete; furnishing and placing 2,400,000 lbs. reinforcement; furnishing and handling 68,500 bbls. cement; installing 360,000 lbs. of pipe, gates, pumps, gratings, etc.; and other work. Completion time 1050 days. For particulars, address Bureau of Reclamation, Kirwin, Kansas; or Building 53, Denver Federal Center, Denver, Colorado.

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.50 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
POSITION WANTED & INDIVIDUAL SELLING OPPORTUNITY undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.50 a line an insertion.

INFORMATION:
BOX NUMBERS count as 1 line additional in undisplayed ads.
DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:
The advertising rate is $17.10 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page. E.N.R.

NEW ADVERTISEMENTS Address New York City Office, 330 W. 42nd St., N. Y. 36, for December 11th issue closing December 1st

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

COMPUTOR FOR established concern, experienced in subdivision and property surveys, location Western Suffolk County, Long Island, N. Y., Write Stating salary requirements. P-6071, Engineering News-Record.

DESIGN ENGINEERS—Men having experience in design and preparation of drawings and reports for highway, sanitary sewer and municipal-type storm drainage systems including inlets, collection systems, interceptors and culverts. Good pay for qualified men with training and experience. Opportunity for advancement. Furnish full information regarding education, training and experience, age, references and salary required. Replies strictly confidential. P-6036, Engineering News-Record.

EXPERIENCED ESTIMATOR and Chief Engineer between the ages of 35 and 45, to take complete charge of office—make quantity take-offs p held price—buy—expedite and do some field supervision. All our work is competitive. We specialize in industrial, commercial and public works. Only experienced and high-grade men need apply. Permanent job for right man. Excellent salary and bonus. Office located in Ohio. Send qualifications, experience. Photograph optional. P-5978, Engineering News-Record.

PLUMBING ESTIMATOR—Experienced man capable of assuming responsibility to take charge of estimating and contract work. This is an exceptional opportunity with an old established plumbing contractor located in Connecticut. Write fully stating experience, reference, education, marital status and salary details. P-5991, Engineering News-Record.

WANTED CITY Engineer for the city of Arlington, Texas. Salary $5,000 and up. Must have actual or related experience. Contact O. B. O'Dell, City Manager, Box 231, Arlington, Texas.

CIVIL ENGINEER experienced in design of airport and military reservation pavements, drainage, and substructures, etc. Must also be capable site planner for civil works associated with building structures. Essential that applicant is capable draftsman. Moderate sized firm, long range possibilities, ideal working conditions. In reply furnish full particulars, state salary expected and when available. Send reply to P. O. Box 8628, Norfolk, Virginia.

WANTED: CONSTRUCTION Superintendent for industrial and commercial construction; located Middle Atlantic States. Send full particulars: education, experience and salary in first letter to Lewis C. Bowers & Sons, Inc., 341 Nassau St., Princeton, N. J. Atten: J. R. Pelikan.

(Continued on page 82)

WANTED

An Alert Mechanical Engineer with Some Knowledge of Electrical Engineering . . . Must Be a Good Calculator . . .

PHILIPS & DAVIES, INC.
KENTON, OHIO

PUBLIC WORKS ENGINEER

For Southeast Architect-Engineer Firm.
Want thoroughly experienced and capable designer of water, gas and sewer plants and systems, drainage, paving, other municipal improvements. Top opportunity to man who can design, promote, and sell projects. Only complete and orderly applications will be considered.
P-5820, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

ENGINEERS and DESIGNERS

Arthur G. McKee and Company has permanent openings in their Cleveland, Ohio and Tulsa, Oklahoma offices for qualified men as:

Instrument Specifications Engineers
Piping Designer
Pressure Vessel Designers

with experience in petroleum refinery design.

Good hourly rates plus overtime
45 hours—5 days per week
Annual profit-sharing bonus
No age limitation

These opportunities are well worth your while to investigate.
Write giving details of background and experience.

ARTHUR G. McKEE & CO.
2300 Chester Ave. Cleveland 1, Ohio

WANTED CONCRETE MACHINERY SALES ENGINEER

A leading construction equipment manufacturer needs a concrete machinery sales engineer for the lucrative New York-New Jersey territories. Only fully qualified and experienced personnel need apply for this unusually good opening. Salary and generous commissions. Interview will be arranged only if experience in concrete construction machinery sales is adequate. Our personnel know of this advertisement. Write complete resume to

P-6079, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED
Experienced
Road Construction Superintendent

Write or phone MR. F. MELAUGH
Old Colony Construction Co. of Quincy
Box 230, Quincy, Mass. President 3-0604

WANTED—GENERAL MANAGER

For construction office in Alberta Canada doing about four million dollars ($4,000,000.00) per annum in buildings and industrial work.
Give complete history of employment, references, and salary expected. Photograph optional.

P-6083, Engineering News-Record
68 Post St., San Francisco 4, Calif.

ASSISTANT OFFICE ENGINEER

Recent electrical engineering graduate with some practical experience in office work and procedure, for work large Copper Company Chile, South America. 3-year contract.

FIELD ELECTRICAL ENGINEER

Whose duties would be to supervise the work done by the District Electrical Foreman in the various camps. This applies to the Plant with its auxiliary services and covers power distribution and utilization, but in general not power generation or transmission, large copper company Chile, South America. 3-year contract. Transportation both ways and salary while traveling paid by Company.

In reply give complete details.

P-6064, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

SALESMAN

"Harrisburg area, calling on contractors, stone crushers and off the highway engine owners, selling broad line of gasoline and diesel engines as well as parts and service. Requirements are practical engine repair experience, good general background and proven sales record. This is a permanent position with development possibilities. Salary, expenses and commission.

Write or telephone
C. T. WOOLSTON,
Auto Gear & Parts Company, Inc.
16th & Hunting Park Ave.
Philadelphia, Pa.
Tel. DAvenport 4-8000

SALESMAN—STRUCTURAL STEEL

An old and well established Company serving the North Central States area with fabricated and erected structural steel offers a responsible position to an experienced and capable estimator-salesman. Prefer graduate engineer, 35 to 45 years of age, with a considerable and successful background in this type of work. Replies should include full particulars as to age, education, experience, and marital status. Correspondence will be held confidential and interview arranged for if qualifications warrant.

SW-5961, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

CHEMICAL ENGINEERS AND CHEMISTS FOR APPLICATION RESEARCH IN Fluorocarbon Polymers WITH Leading Organization in Petroleum & Petrochemical Fields

OPPORTUNITY to join a staff of highly trained and experienced scientists where initiative and ability form the basis for salary and increasing responsibility. The work involves the development of industrial and commercial outlets for new products, and these positions can lead to important jobs in technical service or chemical sales.

QUALIFICATIONS—3 to 5 years' experience in protective coatings, rubber compoundings, films and fibers. Ph. D. helpful but not essential. Applicants should have a pleasing personality and be able to deal with customers on a high technical level.

LOCATION—These research laboratories are conveniently located in metropolitan New Jersey.

(Two 1952 graduates interested in this type of work will be considered for our training program.)

Please send complete resume of background and experience and include salary desired. Interviews will be arranged promptly for qualified applicants.

Box #197, Room 1201
230 West 41 St. New York 36, N. Y.

STRUCTURAL STEEL DETAILERS—with at least four years' experience in structural detailing.

DETAIL DRAFTMEN—with at least two years' experience in structural detailing.

STRUCTURAL DESIGNERS AND DESIGN DRAFTSMEN—with technical training and experience.

Above openings are with Luria Engineering Company in Bethlehem, Pa. Ideal location, country living with city conveniences. Excellent working conditions, good pay and prospects with expanding organization for ambitious, energetic men.

• • • • • • • •

Submit complete record, date available, and starting salary desired to:

J. H. Porteus, Chief Engineer
Luria Engineering Company
Eaton Avenue
Bethlehem, Pennsylvania

The Tennessee Valley Authority wants Civil, Structural, and Office Engineers and Estimators. The work is design and construction of large steam electric and hydroelectric projects and transmission systems. Salaries start at $3700-$4450 and $5325 for 40-hour week. All jobs carry automatic within-grade increases for satisfactory service, liberal vacation leave, sick leave, and retirement benefits. Design and estimating jobs are in Knoxville and Chattanooga, Tennessee. Field and office engineering jobs are at construction sites in the Tennessee Valley area and at Paducah, Kentucky. Write the

TENNESSEE VALLEY AUTHORITY
Division of Personnel
KNOXVILLE TENNESSEE

CONCRETE-HYDRAULIC ENGINEERS

New York engineering organization specializing in design and construction of power plants and industrial structures desires Engineers thoroughly experienced in design of heavy reinforced concrete foundations, steam and hydroelectric power plant structures. Work will include planning, assignment of work, supervision of design and specification writing. Applicants preferably should be at least 40 years old with about 15 years general field and office experience. Please submit complete resume.

P-5748, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

STRUCTURAL ENGINEERS

New York engineering organization specializing in design and construction of power plants and industrial structures desires Engineers thoroughly experienced all phases of structural design, correlated with architectural design. Duties include planning, assigning of work, supervision of design, writing of specifications and requisitioning of materials. Applicants should have at least 15 years general field and office structural experience. Please submit complete resume.

P-5751, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED

MECHANICAL ENGINEER

Leading firm of Engineers, Designers and Construction require mechanical engineer having some experience with steam-electric central station design with specific and thorough experience on all phases of coal handling systems including unloading from rail or water, conveying, crushing, screening, distribution and sampling. Require general knowledge of capabilities and limitations of equipment commercially available. Initial work mainly on coal handling systems but must have ability to develop into well rounded general engineer capable of later handling all phases of central station design. State education, experience and salary desired.

P-5753, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

CHEMIST

Chemist experienced analyzing power plant problems, capable prescribing water treatment methods and writing equipment specifications, training and supervising plant chemists and operators. State education, experience, salary desired.

P-5750, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED

MECHANICAL ENGINEER

Established consulting firm, New York area, desires Mechanical Engineer, capable supervising starting, testing, operating and correcting troubles of steam-electric station equipment. Plant betterment work involving considerable travelling. Technical education, and plant operating or betterment experience required. State education, experience and salary desired.

P-5752, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

CORROSION ENGINEERS

Leading engineering and construction firm offers staff positions to corrosion engineers with minimum of three or four years experience in corrosion investigations and design of cathodic protection on pipe lines and lead cables in country and city networks. Must be graduate electrical engineer (or equivalent). Work involves extensive travel, with headquarters in New York City. Salary commensurate with experience and ability. Good opportunity for advancement.

P-5749, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

CONSTRUCTION ESTIMATOR

Qualified Estimator, thoroughly experienced in estimating and quantity take-off. Background in power plant work, process piping and general industrial construction absolutely essential. State education, experience, qualifications and salary requirements. All applications will be acknowledged.

P-5997, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

POSITIONS VACANT
(Continued from page 80)

WANTED: CONSTRUCTION Engineers. Minimum 5 years' experience on industrial construction. Ages 30-45. Send full particulars: education, experience and salary in first letter to Lewis C. Bowers & Sons, Inc., 341 Nassau St., Princeton, N. J., Atten: J. R. Pelikan.

SURVEY PARTY Chiefs and Instrumentmen—Men having experience in Topographic, Property and Utility layouts. Good pay for qualified men with training and experience. Opportunity for advancement. Furnish full information regarding education, training and experience, age, references and salary required. Replies strictly confidential. Dept. of Public Works, Baltimore County, Towson 4, Maryland.

EMPLOYMENT SERVICE

SALARIED PERSONNEL, $3,000-$25,000. This confidential service, established 1920, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

POSITIONS WANTED

CIVIL ENGINEER, 18 years experience in heavy construction. Dams, powerhouses, buildings and other concrete structures. Preparations of estimates, bids, schedules, cost reports, etc., and active supervision of engineering and/or construction of project. Prefer position as chief engineer or project manager with prime contractor. Foreign or domestic. Complete resume upon request. PW-6068, Engineering News-Record.

EXECUTIVE ENGINEER, long experience, management large company, heavy construction docks, foundations, tunnels, difficult subaqueous structures, etc. PW-5428, Engineering News-Record.

FIELD ENGINEER. Over 20 years experience in heavy industrial and commercial construction. Also highways and bridges. Available immediately. PW-5984, Engineering News-Record.

FIELD ENGINEER & Ass't. Constr. Supt. wishes steady employment. Approx. 30 years' experience mostly on large housing development. PW-6017, Engineering News- Record.

PURCHASING AGENT

Desires employment with heavy industrial and commercial construction firm. Thoroughly experienced in subcontracting all branches of work. Purchasing all types of building materials, construction equipment, etc. Available at once. Write.

PW-5980, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING

OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-first year. Write today.

WILSON Engineering Corp.

College House Offices - HARVARD SQUARE, CAMBRIDGE, MASS.

SUPERINTENDENTS AND PROJECT MANAGERS TRAINING COURSE

All instruction by mail. Send today for sample lesson and complete details

GEO. E. DEATHERAGE & SON
5 E. Preston St. Baltimore 2, Maryland

POSITIONS WANTED

FORMER ARMY Instructor—Unencumbered. Schooled and experienced in construction engineering. Desires position with future. Preferably in sales or supervision. PW-6018, Engineering News-Record.

CIVIL ENGINEER age 24, 8 years experience, sanitary and heavy construction, field and office, available immediately. PW-6085, Engineering News-Record.

CIVIL ENGINEER, 28, married. N. Y. State License, fluent French & working knowledge of Spanish, 7 years of heavy structural design & construction experience including overseas assignment. Desires responsible position, domestic or foreign. PW-6096, Engineering News-Record.

CONSTRUCTION ENGINEER, C.E. graduate, age 34. Experienced on large construction projects—Dams, Pipe Lines, Atomic Energy Projects, etc. PW-6090, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT, concrete pipe manufacturer, considerable experience. PW-6086, Engineering News-Record.

REGISTERED CIVIL Engineer with background of construction supervision, general management, promotion and heavy equipment sales. Presently employed as manager of a general construction company. Midwest location preferred. PW-5975, Engineering News-Record.

REGISTERED STRUCTURAL engineer, B.S. Architectural engineering, 12 years experience in reinforced concrete and structural steel design for all types structures including 2 years overseas air base design. Will consider position involving travel or overseas employment. PW-6019, Engineering News-Record.

SANITARY ENGINEER, B.E. (Civ.), M.S. (San.), 4 years experience, design and operation, water treatment and distribution, sewerage and sewage treatment. PW-6070, Engineering News-Record.

SUPERINTENDENT OF Maintenance & equipment. 28 years experience as operator, mechanic, foreman and super. of equipment. Sober, reliable. PW-6032, Engineering News-Record.

SELLING OPPORTUNITY WANTED

SALES ENGINEER, Mechanical Engineer, 3½ years sales experience, age 28, desires position with manufacturer, request territory in S.E., Atlanta, Ga. headquarters. SA-6045, Engineering News-Record.

PART TIME WORK WANTED

DESIGN, DETAILING and Drafting on Bridges, Buildings and Roads. Work to be done at residential office. PTWW-5992, Engineering News-Record.

CONSTRUCTION BID Estimates and quantity surveys for Architects, Engineers and Contractors in the Cleveland Area. Write PTWW-6005, Engineering News-Record.

WORK WANTED

Quantity Surveys - Design - Drafting Technical Illustrations. Midwest Engineering & Technical Services, 44 West 113th St., Chicago 28, Ill.

BUSINESS OPPORTUNITY

MIT Civil Engineer and Harvard Business School Graduate desires field engineering position with closely held contractor in which management and ownership participation is eventual possibility. Experience as WWII Engineer officer and office engineer, Personal Manager, Assistant to President of Large contractor. 28, married. BO-6072, Engineering News-Record.

CONTRACT WORK

STRUCTURAL STEEL plant in southeast wants contracts for fabrication of structural and plate work. Capacity 500 tons month. CW-6078, Engineering News-Record.

FOR SALE
CIVIL ENGINEERING and SURVEYING BUSINESS

Located in Chicago and grossing between $70,000 and $80,000 per year. Will pay three principals $10,000 annual income per person. $30,000 in records and field and office equipment. Terms can be arranged.

BO-5862, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ATTENTION CONTRACTORS:

List your equipment with us for quick sales. We also store your equipment in our yard for a small fee until sold if you desire.
Consult us for your equipment needs.

FINEST CONSTRUCTION & EQUIPMENT CORP.
147-47 Farmers Blvd., Jamaica 5, N. Y.
Tel. LA 7-3637

DERRICK WANTED

Steel guy derrick, capacity 10 to 20 tons, rigged for clamshell work, 90 to 100-ft. boom. State price and location.

W-5900, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED TO BUY:

Barber-Greene paving machine. State price, condition, and age. Apply at once.

Box 95, Perkasie, Penna. or
Telephone—Perkasie 2081

WANTED

CRANE BOOM, flange type up to 100 Feet for Model 80D, Northwest; will take fairleads, rudomatic, and lagging if available.

A. & J. BUYERS, INC.
3580 Sheridan Dr., Buffalo 21, New York

NOTICE

EXCAVATING CONTRACTORS
275,000 CUBIC YARDS OF DIRT TO MOVE

We are accepting bids on the removal of 275,000 cubic yards of dirt to be moved on our premises. Maximum haul 1000 yards. Ten acres of timber clearing to be done. Bids due at our office December 15, 1952. Work to start not later than January 1, 1953 and to be fully completed in approximately ninety (90) days.

If interested please write or phone for full specifications of cuts and fills.

FORT LINCOLN CEMETERY
3201 Bladensburg Road Washington 18, D. C.
LIncoln 3-3578

FOR SALE—*Used Equipment*

1—A-C "D" grader equipped w/scarifier and rear end loader. Checked over and repainted. Tires fair..... $3,900.00

1—LaPlant-Choate Model C108 cable scraper; 8-12 yd. Tires and general condition is good $4,500.00

1—A-C HD-10 tractor w/ late type Gar Wood cable dozer and DD CCU. Good condition $5,900.00

1—Allis-Chalmers Model B125 power unit. Used only 20 hrs..... $390.00

1—Allis-Chalmers Model 54 tandem drive patrol $790.00

1—M-M Model ZTU rubber tired row crop farm tractor, Serial #579168U..... $650.00

1—Cat. RD-6 tractor w/ LeT. cable dozer. Fair condition $1,900.00

1—A-C HD-10 w/ LeT. cable dozer. Good condition. New sprockets and pins & bushings in track..... $4,950.00

1—Gar Wood Model 25 hyd. scraper; 5 yds. heaped $1,000.00

Honest opinion on Used Equipment

DUNMIRE EQUIPMENT CO.

Phone 300 El Paso, Illinois

FOR SALE

Cleveland 95 Trencher
Parsons 310 Trencher Liners
P & H 655 Shovel or Crane
Lorain 78 Shovel or Crane
Manitowoc 3500 Shovel or Crane
Northwest 6 Shovel or Crane
P & H 855 Shovel or Crane
P & H 255A Truck Crane. Serial No. 7174
Bay City 180 Truck Crane, Serial No. 5165
D-7 Hydraulic Angledozer, Serial No. 3T-4510
D-7 Cable Angledozer, Serial No. 7M-660t
D-7 Hydraulic Angledozer and DDPCU, Serial No. 3T4227
D-4 Traxcavator, Serial No. 7U-10365
HD-5G Front End Loader, 5900 Series
Air Compressors—105 CFM—All Makes
160, 406 and 410 Buckeye Ditchers—Good Shape

A. C. R. CO.

19615 Nottingham Rd. Cleveland 10, O.

STEEL FORMS

FOR SALE

About 2300 sq. ft. steel forms suitable for Y walls in Aeration Tanks. Forms as good as new.

CORIGLIANO BROTHERS

Starling Bldg. Ossining, N. Y.

PUMPCRETES

Rebuilt Current Models
For Sale or Rent
CONCRETE EQUIPMENT COMPANY
312 E. Wisconsin Ave.
Milwaukee 2, Wis.

Bucyrus-Monighan Walking draglines, 1150B (25-yd.) elec.; 9-W, 6-W diesel; Marion 7200. Bucyrus 120B 4½-yd. 25 cycle electric shovel. Marion 3½ and 7½-yd. diesel shovels. Locomotives, 7 to 80 tons, diesel, gas (12). Gyratory crushers, Tels. 28A, A-C 27", 42". Whirley portal gantry cranes, 40 tons (3). LaPlant-Choate TS-300 scrapers; Euclids (5). Bucyrus 2-1/3 yd. shovel att. Unity, 55B, 52B.

H. Y. SMITH CO.
828 N. Broadway Milwaukee 2, Wis.

DO YOU KNOW THAT *Salamander*

IS DERIVED FROM THE MYTHICAL ANIMAL WHICH ENDURED FIRE WITHOUT HARM?

DO YOU KNOW THAT ECA is THE reliable source for modern salamanders (oil-burning), hot water heaters, heat machines and boilers?

THIS MONTH'S SPECIALS
HEATING EQUIPMENT

Boilers — from 6 to 100 HP, portable, vertical & locomotive type, hi & low pressure, complete.

Heat Machines—New Improved Heat Machines (Space Heaters). Amazing Value and Performance. Write us for particulars.

Salamanders— Brand New Danco Oil Burning Salamanders, Immed. Shipment.

AIR COMPRESSORS
Portable, 2-Stage

2—210' Sullivan, Sers. 22115, 22277, 4 cyl. Buda gas eng. Mdl. JK-4, only $1850 each.

34—Air Compressors, Sullivan, LeRoi, Chicago Pneumatic, Ing. Rand, Schramm, Gardner Denver—60, 105, 160, 210, 315 and 500 cu. ft., both gas and Diesel powered.

BOILERS, VERTICAL

1—50 HP 54"x85½" International Boiler #718, 150# WP, ASME, w/fittings. Wt. 7000#.

1—40 HP Nagle Eng. & Boiler Works Boiler #73185, 125# pressure, 48"x108" ASME 1292, w/fittings.

CONVEYOR, TROUGH TYPE

1—40' Trough Type Belt Conveyor, 24" belt, 2 pneu. tires, raising & lowering device, 4 cyl. Wisc. air cooled gas eng.

CRANES, CRAWLER

1—¾ yd. P&H Mdl. 255A Crane, Ser. 5750, 6 cyl. Wauk. gas eng., 35' boom, fairleads. Rudomatic tagline. Rebuilt. Real buy.

1—Bucyrus Erie Mdl. 33B, 1¼ yd., Ser. 18502, 8 cyl., V type Le Roi gas eng. (eng. new 1948), 50' boom. Wt. approx. 70,000#.

1—1¾ yd. Link Belt Mdl. 370 Crane or Dragline, high gantry, long & wide pads, Cat. D-13000 Diesel eng. For rental only.

CRANES, LOCOMOTIVE

1—25 ton Industrial Brownhoist Type G, 40-50-60' boom, Nat'l. Board Boiler, 150#.

DERRICKS

Several GUY and STIFFLEG DERRICKS, from 10 to 30 ton capacity, complete with hoisting equipment.

HOISTS, ELECTRIC

1—100 HP American 3/drum, 3/60/440 slipring motor. Cap. 9,000# @ 275 FPM, with attached Lidgerwood swinger.

3—40 HP Thomas 2/drum, attached swingers, 2 powered by 60 HP GE slipring motor, 220/440/60/3; one w/o power. Cap. 7,000# @ 200 FPM.

HOISTS, STEAM

1—8½x10 2/drum Lambert, w/space for boiler, drums 14x25x7".

1—9x10 2/drum Lambert, skeleton type, drums 14x24x7".

1—10½x12 2/drum Lambert, w/space for boiler; 1 drum 24x34x7½", line pull 9,000#; 1 drum 16"x34"x10½", line pull 13,000#.

ROAD ROLLERS

1—8 ton Acme Tandem Road Roller #7024-D, 6 cyl. Hercules gas eng., with both power & hand steer, wt. 18,000#. Excellent shape.

1—10 ton 3-wheel Hercules Road Roller #1197, 4 cyl. Cummins Diesel eng., hydraulic steer, wt. 24,500#.

Partial list only—please let us quote on your requirements.

Clifton Heights, Pa.
Box J-608, Sub. of Phil.
Phone MAdison 6-2200

Pittsburgh 30, Pa.
Box J-933
Phone FEderal 1-2000

ECA
EQUIPMENT CORPORATION OF AMERICA

Chicago 12, Illinois
1155 S. Washtenaw Ave.
Phone NEvada 8-2400

New York 7, N. Y.
30-J Church Street
Phone WOrth 2-0036

FOR SALE
REX MOTO MIXERS

NEW—NOT USED *IMMEDIATE DELIVERY*

5—8 CUBIC YARD CAPACITY MOTO MIXER (NO CHASSIS) AGC RATING — 8 YD. MIXER, 10½ YD. AGITATOR 316 GALLON MIXING TANK—40 GALLON FLUSHING TANK. CHRYSLER ENGINE FLUID COUPLING DRIVE.

EDWARD EHRBAR, INC.

29 MESEROLE AVE. EVergreen 3-5000
BROOKLYN, N. Y. C. B. De LEON

DEPENDABLE USED MACHINES

SPECIAL—Model 25 Bay City ½ yd. backhoe rebuilt in our shop. Come see it!

Univ. ½ yd. hoe
Lorain 40 shovel
P&H ½ yd. crane
Lessman loader
Gallon motor grader
Pioneer 3 x 14 scrubber screen
Cedar Rapids 40 x 20 roll crusher
Gruendler 10 x 36 crusher with power
Silent Hoist Krane Krawler
20" x 40' port. belt conveyor
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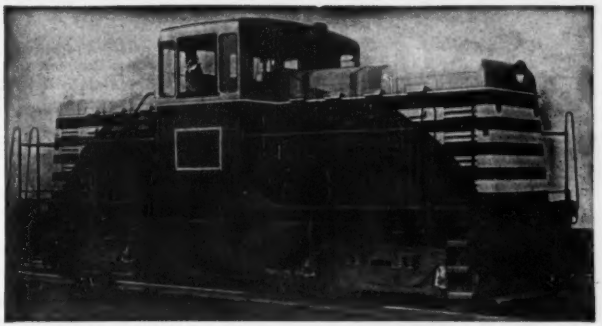

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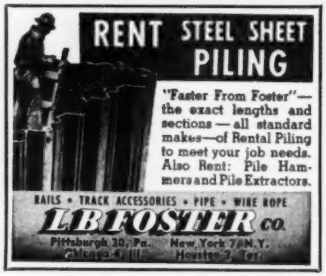
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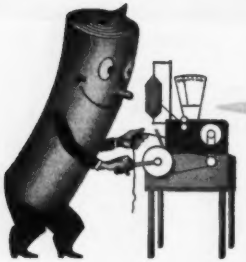

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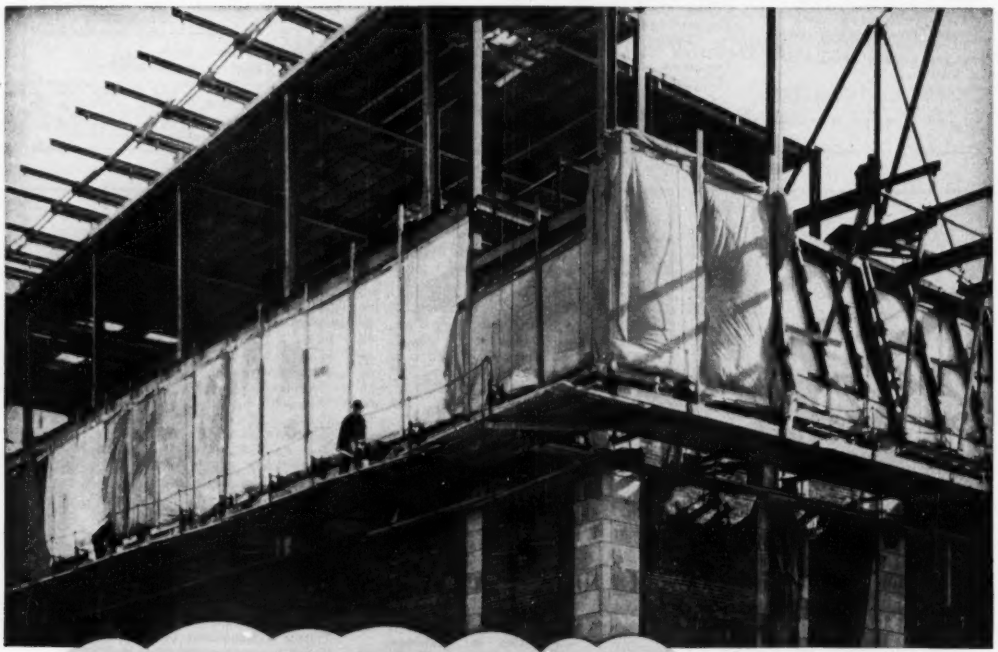

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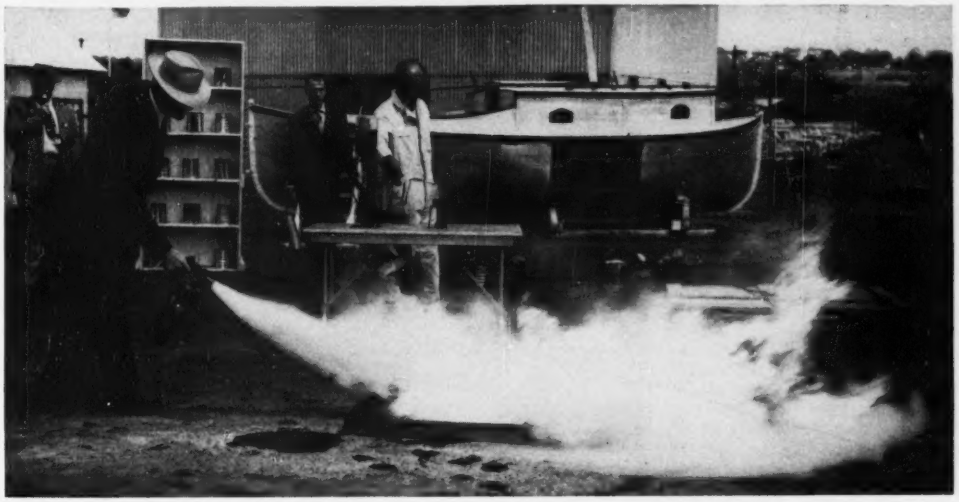


Dry chemical extinguisher rechargeable at any air hose

For fires in inflammable liquids, live electrical equipment, LP gas, textiles etc., dry chemical fire extinguishers offer the utmost in fire control. Walter Kidde & Co. Inc., provides four different sizes, the largest of which is a 150-lb wheeled model that's been designed to pass through standard doorways. The dry chemical is expelled by nitrogen stored in a clamped-on container under pressure of 2000 psi, with power chamber pressure usually held between 210 and 230 psi. Depending upon the type and location of the fire, a nozzle control will produce a stream to beat back a fire or a fan pattern to blanket it completely.

• **Two carbon dioxide models**—Two smaller sizes, 20-lb and 30-lb models are provided by Kidde with carbon dioxide cartridges for expulsion of the dry chemical. These cartridges contain 8 oz of liquified CO_2 stored at 850 psi. The same cartridge can be used for both models, thus simplifying storage and preventing errors in replacement. There is extra speed in operation of all these Kidde extinguishers since all an operator need do is pick it up, aim at the fire and pull a trigger. There's no lost motion, no reading of instructions, no chance for mistakes.

• **Exceeds FML requirements**—To receive Factory Mutual Laboratories' approval, a 20-lb dry chemical extinguisher in the hands of an experi-

RELOADING 5-LB Kidde dry chemical extinguisher is simple. After inverting and squeezing trigger to release any pressure, handle valve and syphon assembly is removed (left). Five pounds of dry chemical is then added (center), seating surfaces are cleaned and valve replaced. Moisture trap replaces discharge horn, trigger is pulled and air introduced from any handy line (right). Horn is then replaced and extinguisher is ready again to be inserted in clamp and kept in car, truck, etc.

enced operator must extinguish a specified amount of burning gasoline. In repeated lab and field tests, under various conditions, the Kidde 20-pounder exceeded these gasoline fire requirements by 44 per cent.

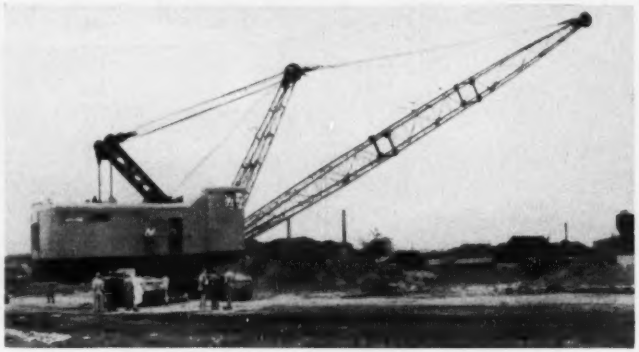
• **Smallest is 5-pounder**—Smallest and most versatile of the extinguishers is the little 5-pounder (Model 5P), which, with its mounting hook or bracket, can be kept in a truck, car, garage, office, etc. It's pressurized with 150 lb of dry air and has no cartridges, no replacement parts, no special tools. The diffuser horn has been designed to give the same wide, cloud-like discharge pattern as the larger models, thus eliminating much of the movement required with discharge of other dry chemical extinguishers of similar size. Low air pressure permits use of a lightweight cylinder, so that the fully-charged unit weighs only 10 lb and is a "one-hand" model.

When the trigger is squeezed the pressurized air forces the powder upward through a syphon tube that runs all the way to the tank bottom to assure complete discharge of all the contents. Since the powder outlet is located at the top, there is no danger of powder packing at the discharge opening.

• **Pressure gage and moisture trap**—A shock-mounted pressure gage in the handle provides quick, accurate indication that the extinguisher is in operating condition. A charging relief valve gives warning of excessive pressure during recharging. Underwriters' Laboratories requires the use of a moisture trap when commercial air lines are used to pressurize the extinguisher, to preclude possibility of moisture entering. Kidde provides a special charging adapter with a moisture trap that fits into the discharge opening and permits use of any standard air chuck for recharging. An adapter can also be provided for recharging with nitrogen instead of air.

• **How dry chemical works**—Dry chemical is a multi-action extinguishing agent that attacks fire in a variety of ways simultaneously. It forms a three-dimensional blanket which excludes air, dilutes oxygen in the flame zone and absorbs heat. With this absorption it decomposes rapidly, releasing both carbon dioxide and water vapor. Because of its high heat absorption and heat deflection qualities, it acts as an insulating screen, shielding the operator from heat. Being a fine powder, it finds its way readily into cracks and crevices, gets into corners and around obstructions.

To be most effective, dry chemical must be driven with sufficient force to overcome updrafts, but should not spread the fire by splashing liquids. The Kidde models applying it in a cloud-like pattern, have ample range. WALTER KIDDE & CO., INC., BELLEVILLE 9, NEW JERSEY.



300-ton dragline has 8-yd bucket

Reportedly the largest dragline ever mounted on a single pair of crawler frames, Harnischfeger Corp.'s new model 1855 was demonstrated to a group of contractors at the company's Milwaukee plant recently. Those who witnessed the demonstration were particularly impressed with the machine's four separate Magnetorque units which control all operations on the 8-yd giant. Digging, hoisting, swinging and even propelling movements are governed by the electro-magnetic controls which have eliminated friction clutches entirely.

The magnetic pull which replaces mechanical friction transmits power without any mechanical linkage or wear; thus shock loads are eliminated. The heavy-duty dragline has a working weight of 600,000 lb and can handle an 8-yd bucket on a 120-ft boom or a 7-yarder with 150-ft boom. Power comes from an 8-cyl Cooper-Bessemer FV8 diesel which develops 590 hp at 900 rpm.

Top of the cab is 19½ ft and distance from ground to bottom of counterweight is 5½ ft. Ground pressure is 16.2 psi and overall width of the crawlers, with their 60-in.-wide shoes, is 22½ ft. The crawler length is 29 ft.

Other important data on the 1855 is hoist line speed of 246 fpm, digging line speed of 199 fpm, hoist line pull of 75,600 lb and digging line pull of 93,500 lb. Traveling speed is 0.5 mph and rotating speed reaches 3.54 rpm. The first model, pictured here, has been purchased by Wingert Contracting Co. of Butler, Pa. for use in coal stripping operations at Sligo, Pa. HARNISCHFEGER CORPORATION, MILWAUKEE, WISCONSIN.

Two torque converter items offered by Fuller

Fuller Manufacturing Company recently offered two more additions to the ever-increasing line of torque conversion items. One is a new transmission for use with torque converters and the other is a new type of torque converted coupling.

The new transmission—Model 4-FS-1440—was designed for use in the biggest off-the-highway trucks up to 400 hp. Designed with closely spaced gear ratios and high ratio of capacity to weight, the new transmission makes load-and-road performance possible in heavy hauling where conditions are unusually severe, particularly in mining and heavy construction.

The new unit offers the following ratios in the five speeds: first, 1.98; second, 1.40; third, 1.00; fourth, .71; reverse, 1.61. The clutch housing size is SAE #1 and weight is 775 lb.

The 4-FS-1440 has two SAE standard large power take-off openings, and may be fitted with speedometer gears. Oil capacity is 14½ qt.

The new converter coupling drives are bringing advantages of torque conversion to a variety of construction and materials-handling equipment such as front-end loaders, travel-loaders, tow trucks, cranes, lift trucks, hoists, etc.

(*Continued on page 94*)

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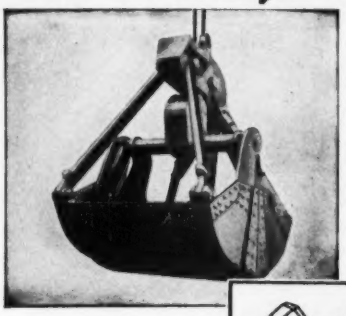

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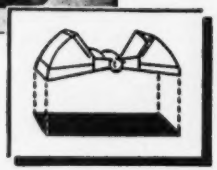

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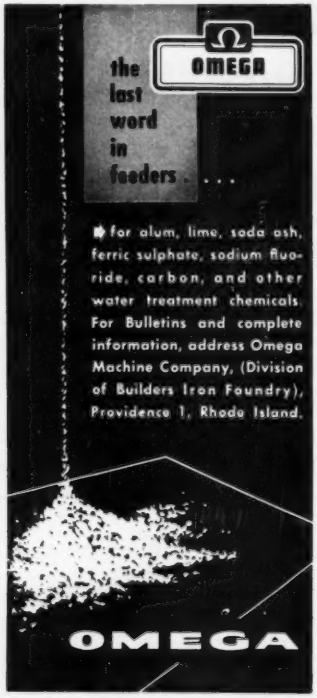
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NEW PRODUCTS

(*Continued from* page 92)

During starting and pulling under load, the new Fuller converter coupling automatically provides up to 2 to 1 hydraulic torque multiplication, eliminating shock load on all component units of the drive line. During converter operation, the reaction member is locked to the housing through an overrunning clutch—changing the oil direction so that thrust reaction is taken by the housing.

As the vehicle's load demand tapers off during normal running conditions, the new drive automatically changes to 1:1 coupling operation, providing fuel economy wherever possible, according to the manufacturer.

Labeled 12-A, it provides a flanged output and an SAE No. 3 flywheel housing at the rear, permitting installation of a second flywheel automotive clutch with the transmission. Model 12-S has a splined output shaft for straight line drives with a universal joint.

The new converter coupling is designed to handle engines developing from 180 to 225 ft lb of torque at 2,000 to 2,200 rpm or higher. FULLER MANUFACTURING COMPANY, KALAMAZOO, MICHIGAN.

New Products briefs . . .

Originally designed for military use, the high capacity BOE 600S **Clayton Kerrick Steam Cleaner** is now made available in a civilian model. Capable of discharging up to 540 gph of pressure detergent spray or hot or cold pressure rinse, it is available from **Clayton Manufacturing Company, El Monte, Calif.**

Underwriters' Laboratories, Inc., has approved the **MSA Explosimeter, Model 2,** a portable instrument developed by **Mine Safety Appliances Company, Pittsburgh 8, Pa.,** for use in **detecting hazardous gas or vapor-air atmospheres.** It also approves a special filter cartridge, incorporating a chemical reagent, used with the instrument when sampling leaded gasoline vapor. Unit is powered by flashlight batteries.

A new **line of oil hydraulic vane motors** is announced by **Vickers Inc., 1400 Oakman Blvd., Detroit 32, Mich.** An exclusive rocking beam construction keeps all vanes in intimate contact with the cam ring at all times, yet not subject to the fatigue failure difficulties of spring-type vane actuators. They are now available for 5.0, 6.5 and 26-hp output.

PUBLICATIONS

Steelox Buildings—This 24-p highly illustrated booklet (SX-2051) describes how the company's interlocking panels are erected, with detailed drawings to aid the reader. The booklet shows how two standard types—shed roof and gable roof—meet practically every need for warehouses, shops, offices and other similar structures. Sections deal with accessories, insulation, painting, interior finishing. Copies may be obtained from ARMCO DRAINAGE & METAL PRODUCTS, INC., MIDDLETOWN, OHIO.

Safway Shores—Methods of using Safway shoring to support scaffolding, and particularly to ease close decking are discussed in a 4-page folder along with specifications of the product, advantages of its use, drawings showing installations and bracing systems. The shores are said to have advantage of one-man operation and require no nailing. They are adjustable to exact required heights from 6 ft to 15 ft 6 in. SAFWAY STEEL PRODUCTS, INC., W. STATE STREET AT N. 63rd STREET, MILWAUKEE 13, WISCONSIN.

"A new concept in D. C. Welding"—is the title of a 6-page folder describing A. O. Smith Corporation's heavy-duty d.c. rectifier welder. Some of the features mentioned are lower power cost, less maintenance expense, minimum floor space, smoother arc action, fully weatherproofed case and effortless current control. Cutaway views show the complete interior of the machines, which are available in 200, 300 and 400-amp ratings. A. O. SMITH CORP., WELDING PRODUCTS DIVISION, P. O. BOX 584, MILWAUKEE 1, WISCONSIN.

Electrical wires and cables—This 186-page, spiral-bound booklet is one of the most comprehensive ever published and, in ten chapters, lists every imaginable type of wire and cable made by U. S. Rubber Company.

Sections include portable cords and cables, railroad wires and cables, power cables, control and signal cables, building wires and cables, bare and weather-proof wires, flexible cords and cord sets, telephone wires and cables, miscellaneous U. S. wires and cables, and techincal data.

The book has a host of pictures and numerous tables giving diameters, areas, approximate weights, packaging data, and stranding. U. S. RUBBER CO., ELECTRICAL WIRE AND CABLE DEPARTMENT, 1230 AVENUE OF THE AMERICAS, NEW YORK 20, N. Y.

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EDITORIALS

Keep roads open

CLOSING A MAIN HIGHWAY when fog rolls over it—as was done on the New Jersey Turnpike a few days ago—prevents accidents on that road but provides no solution for the accident problem raised by fog. The only real solution to that problem will be found in properly disciplined drivers. Closing a main highway under fog conditions forces vehicles planning to use the closed highway onto parallel routes where congestion or unfamiliarity with the road compels the drivers to travel at a slow pace. This does minimize the possibility of chain accidents of the type that caused the loss of two lives on the New Jersey Turnpike over the weekend, yet it is only a palliative, not a solution for the problem raised by fog. Also it may increase the rate of minor accidents on the parallel roads and certainly must result in serious congestion and delays.

That the New Jersey Turnpike Authority is fully aware of the fact that closing its turnpike was only an expedient is obvious from the announcement of its plans to cut the speed of vehicles on the turnpike drastically when fog begins to form (see p. 26). The new signs and pavement marking should be a material help to drivers willing to conform to regulations. And the proposed increase in the police force should materially reduce the number of drivers unwilling to take the precautions needed to avoid accidents.

Design rules need revision

A VARIETY OF TESTS have been completed recently on structural members and their connections that provide much more accurate data on their behavior than have been available till now. The test results are a valuable guide to the type of revisions that are needed in present design specifications.

Last summer the Column Research Council, after many years of study, announced that it considered the tangent-modulus formula the best available for predicting the ultimate load that can be supported in compression by straight, prismatic, axially loaded, compact columns (ENR July 17, p. 72). This formula is obtained by substituting the actual slope of the metal's stress-strain curve for the modulus of elasticity called for in the well known Euler formula. It holds in the inelastic as well as in the elastic range.

The Research Council on Riveted and Bolted Joints has also sponsored tests that have yielded interesting conclusions. To be published in ENR in the next few weeks, these include suggestions for determining the allowable unit stress for rivets subjected to combined shear and tension and for designing more efficient tension splices with rivets or bolts.

Still another set of important test results is that reported by the Committee on Impact and Bridge Stresses of the American Railway Engineering Association (AREA Bulletin, No. 503). These results point up a weakness in current design specifications that many engineers have long suspected. The tests were made on reinforced concrete slab bridges, but very likely the same general conclusions on impact stresses may apply to other designs as well.

After tests with steam and diesel locomotives at speeds up to 80 mph, in which strains were measured and stresses computed, the committee concluded: "The impact percentages exceed the AREA design values by a considerable amount . . . but the impact stresses are appreciably smaller than those predicated by AREA design rules . . . Only small longitudinal forces are transmitted to the structure when the brakes are applied to a fast-moving train."

It is not to be expected that the conclusions reached in these research projects will be incorporated in design specifications immediately. More tests may be needed to verify the conclusions, to answer questions they raise and to broaden or limit their application. Suitable substitutes must be worked out for the design rules that the tests indicate are inadequate. Furthermore, since the specifications are written by committees, agreement among a large number of engineers must be reached. In the meantime, it is heartening to realize that this research eventually should pay off in better designed and less costly structures as the findings are incorporated in revised specifications.

In defense of sewers

AN ACCOUNT of recent developments in fluorescent lighting in our issue of October 30, ended with the following cryptic statement: "Finally, there is available a new disposal unit for used fluorescent tubes that sells for less than $90. It crushes the lamp into a powder which can be washed down a drain."

Sanitary engineers and city public-works officials might well have wondered at that statement: What next is to be flushed down the drain?

We recently reported a prediction that by 1975 some 65 to 75% of all garbage will be ground and put into the sewers. That is all well and good if cities plan for it and design new disposal facilities to handle the added load.

But a line should be drawn somewhere. Today fluorescent tubes, burned out by the hundreds in large cities, are proposed for drain disposal. Tomorrow it may be paper, tin cans or ashes. It would seem to us that the makers of fluorescent tube grinding units might furnish cartons marked "Poisonous" in which the ground glass with its toxic coating could be placed for disposal as dry refuse in safe areas on dumps. Even sewers can be abused.

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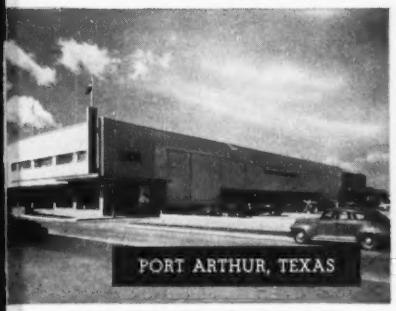
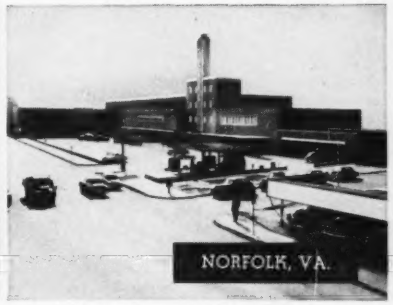
Sears Roebuck & Company continues to turn to Raymond for their foundation work . . . Sixteen different Sears stores (seven shown here) in ten States rest on Raymond piles . . . These repeat performances are further evidence that leading industrial organizations consistently utilize Raymond services for their important projects.



Architect & Engineer: George L. Dahl.



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